

**SECTION 00 0101
HRA PROJECT TITLE PAGE**

662 COTTAGE AVENUE

**INVEST SAINT PAUL INITIATIVE
NEIGHBORHOOD STABILIZATION PROGRAMS
AND REBUILDING PLAN 2009-2013**

OWNER

The Housing and Redevelopment Authority of Saint Paul, Minnesota

25 West Fourth Street, Suite 1100, Saint Paul, MN 55102

Tchu Yajh

(651) 266- 6592

tchu.yajh@ci.stpaul.mn.us

HRA SCOPE WRITER

Cermak Rhoades Architects

275 East Fourth Street Suite 800 Saint Paul, MN 55101

Terri Cermak

651-556-8631

tcermak@cermakrhoades.com

HRA Construction Manager

Paul Ormseth, LLC

423 Landmark Center, 75 W. 5th Street, St. Paul, MN 55102

Paul Ormseth

(612) 715-5020

paulormseth@gmail.com

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SECTION 00 4002
HRA BID INVITATION

PART 1 GENERAL

1.01 CONTACT TRANSLATION

- A. In Hmong - Ceeb toom. Yog koj xav tau kev pab txhais cov xov no rau koj dawb, Amy Filice 651-266-6568;
- B. In Spanish - Atención. Si desea recibir asistencia gratuita para traducir esta información, llame a Amy Filice 651-266-6568;
- C. In Somali - Ogow. Haddii aad dooneyso in lagaa kaalmeeyo tarjamadda macluumaadkani oo lacag la' aan wac, Amy Filice 651-266-6568.

1.02 PROJECT SUMMARY

- A. Project description: This is a Residential Renovation project located at 662 Cottage Avenue. This project is funded by Neighborhood Stabilization Program through the The Housing and Redevelopment Authority of Saint Paul, Minnesota. This project is not required to conform to Federal and/or Little Davis Bacon requirements.

1.03 NOTICE TO PROSPECTIVE BIDDERS

- A. These documents constitute an invitation to bid to General Contractors for the construction of the project described within this bid manual.

1.04 OWNERSHIP INFORMATION

- A. The Owner, The Housing and Redevelopment Authority of Saint Paul, Minnesota, hereinafter, referred to as Owner.
- B. Owner's Project Manager: Tchu Yajh
Address: 25 West Fourth Street, Suite 1100, Saint Paul, MN 55102
Phone Number: (651) 266- 6592
Email: tchu.yajh@ci.stpaul.mn.us

1.05 OWNER'S CONSULTANT(S)

- A. Owner's Project Specification Consultant: Cermak Rhoades Architects
 - 1. Specification Writer's Name: Terri Cermak
 - 2. Address: 275 E. Fourth Street Suite 800, St. Paul, MN 55101
 - 3. Phone Number: (651) 556-8631
 - 4. Email: tcermak@cermakrhoades.com
- B. Owner's Construction Manager Consultant: Paul Ormseth, LLC
 - 1. Construction Manager's Name: Paul Ormseth
 - 2. Address: 423 Landmark Center, 75 W. 5th Street, St. Paul, MN 55102
 - 3. Phone: (612) 715-5020
 - 4. Email: paulormseth@gmail.com

1.06 IMPORTANT BID DATES

- A. Bids Issued: October 19, 2012.
- B. Mandatory Pre-Bid Site Tour: October 26, 2012 from 11:00 am - 12:30 pm.
- C. **BID DUE DATE ON OR BEFORE:** November 9, 2012 no later than 2:00 PM local time.
Address: 25 West Fourth Street, Suite 1100, Saint Paul, MN 55102.
Suite: 1100
- D. **PUBLIC BID OPENING AND LOCATION:** 2:15 PM local time, at the office of The Housing and Redevelopment Authority of Saint Paul, Minnesota
Address: 25 West Fourth Street, Suite 1100, Saint Paul, MN 55102.
Suite: 1100
- E. Executed Contract: Within 30 days of the bid award.

- F. Construction Start Date (Approximate): ASAP after contract execution
- G. Construction Completion Date: 150 days from the time of issued Notice to Proceed.

1.07 RIGHTS RESERVED BY THE OWNER

- A. The Owner reserves the right to:
 - 1. Reject all bids received in response to this Bid Invitation, and at the Owner's discretion, issue a new Bid Invitation.
 - 2. Amend any portion of this Bid Invitation and disseminate such amendments to potential bidders in the same manner as the original Bid Invitation (eg newspaper, online posting). Bidders will be responsible for meeting the requirements of all amendments.
 - 3. Waive any minor irregularities in bids received.
 - 4. Disapprove any subcontractor for not being a responsible subcontractor and/or being on a debarment list.
 - 5. Select more than one bidder to perform various elements of the Project.

END OF BID INVITATION

SECTION 00 4003
HRA INSTRUCTIONS FOR BIDDERS

PART 1 GENERAL BID DIRECTIONS

1.01 EACH BIDDER SHALL FULLY INFORM HIM / HERSELF AND ANY SUBCONTRACTORS PRIOR TO BIDDING AS TO ALL EXISTING CONDITIONS AND LIMITATIONS INCLUDING COMPLIANCE REQUIREMENTS UNDER WHICH THE WORK IS TO BE PERFORMED AND SHALL INCLUDE IN THE BID A SUM TO COVER THE COST OF ALL ITEMS NECESSARY TO PERFORM THE WORK AS SET FORTH IN THE BID PROJECT MANUAL. THE SUBMISSION OF A BID SHALL BE CONSTRUED AS CONCLUSIVE EVIDENCE THAT THE BIDDER HAS MADE SUCH EXAMINATION.

1.02 BID FORMS

- A. The Bid Submission forms are available online at <http://www.stpaul.gov/nsp>.
- B. Each bid must be submitted on the Bid Submission forms identified in the provided checklist. It is expected that the Contractor retain a copy of their entire submittal for their records. The copy of the bid submitted must be signed at every place that a signature is requested.

1.03 CORRECTIONS

- A. Erasures or other changes in the bid must be dated and initialed over the signature of the bidder.

1.04 BID ENVELOPE

- A. Place bid in envelope with the contractor name and address in the upper left-hand corner as the return address, and list the property address in the middle of the envelope as the addressee. Seal envelope.

1.05 INTERPRETATIONS OF SCOPE OF WORK

- A. Every request for an interpretation shall be in writing, unless otherwise documented by the Specification Writer. Questions will be taken until 3 days before bids are due.
- B. Interpretations will be in the form of an addenda which will be on file at the website, and in the offices of the Specification Writer at least three calendar days before bids are opened.
- C. It shall be the bidder's responsibility to make inquiry as to addenda issued.
 - 1. All such addenda shall become a part of the contract and all bidders shall be bound by such addenda.

1.06 CONFLICT WITH DOCUMENTS

- A. When a conflict arises between the Drawings or the Scope of Work, the Drawings shall govern.

1.07 MATERIALS APPROVED:

- A. Where items of equipment and material are specifically identified herein by a trade name, model or catalog number, only such specified items may be used in the base bid.
- B. Contractors desiring approval of substitute products may submit data cut sheets and product information for approval during the bidding cycle.
- C. Contractors will be notified only by addendum of additional approved products.
- D. Material identifications made in work specifications are considered as minimal quality for acceptance in bidding and installation.

1.08 ALTERNATES:

- A. The Contractor must submit bids for each alternate listed in the Alternates List.
- B. If pricing is not listed for Alternates the bid may be disqualified.

1.09 TIME FOR RECEIVING BIDS:

- A. Bids are to be delivered to the HRA's office.
- B. Bids received prior to the time of opening will be securely kept.

- C. Bids received by phone or fax will not be considered.
- D. Modification of bids already submitted will be considered if received prior to the hour set for receiving the bids and written confirmation of such modification - with the signature of the bidder - is placed in the mail and postmarked and / or delivered to the HRA prior to the time set for bid opening.

1.10 OPENING OF BIDS:

- A. At the time and place fixed for the opening of bids, every bid received within the time fixed for receiving bids will be opened irrespective of any irregularities.
- B. The opening of the bids will be an "open process" (open to the public).

1.11 WITHDRAWAL OF BIDS:

- A. Bids may be withdrawn in writing, by phone, or by fax prior to the time fixed for opening; provided that written confirmation of any phoned or faxed withdrawal is placed in the mail and postmarked and / or delivered prior to the time set for bid opening.
- B. Negligence on the part of the bidder in preparing their bid confers no right of withdrawal or modification of his bid after such bid has been opened.

PART 2 BID ANALYSIS PROCESS

2.01 CONTRACTOR SELECTION DATE: EARLIEST PRACTICAL DATE

- A. This project is funded by the Neighborhood Stabilization Program (NSP), a federal stimulus program created to rehabilitate vacant housing or construct new housing on vacant lots within targeted areas of the City of Saint Paul.
- B. The Housing and Redevelopment Authority of Saint Paul, Minnesota reserves the right to check the qualifications of contractors for each project; previous experience working on projects with the The Housing and Redevelopment Authority of Saint Paul, Minnesota, will not automatically deem a contractor qualified.

2.02 MINIMUM CONTRACTOR QUALIFICATIONS

- A. Please note the following minimum qualifications that apply to all bidders:
 1. **Quality Workmanship and Qualifications**
 - a. Three references from jobs with similar work (include on Contractor Qualification form)
 - b. Two financial references (included on Contractor Qualification Form)
 - c. At least 2 years of experience as a General Contractor (HRA will verify)
 - d. Review of standing with Secretary of State, Federal Excluded Parties list, City of Saint Paul Debarment list, Department of Labor and Industry, Better Business Bureau (HRA will verify)
 - e. Houses with historic features or located within a historic district may require demonstration of quality workmanship for historic renovation at the discretion of HRA staff.
 2. **Financial Capacity**
 - a. Demonstrated ability to pay two months of construction costs for each project awarded (these amounts are added together if more than one project is under construction). Financial capacity documentation must be in the name of the General Contractors organization or the principal of that organization.
 - 1) For a 150 day project, the contractor shall demonstrate the ability to pay 50% of bid amount.
 - 2) For a 90 day project, the contractor shall demonstrate the ability to pay 65% of the bid amount.
 - 3) Demonstration of capacity can be in the form of:
 - (a) Line of credit from banking or lending institution
 - (b) Cash balances from banking or lending institution
 3. **Ability to Perform**

- a. Up-to-date submittals to Affirmative Action, Section 3, and Vendor Outreach programs.
- b. Adherence to timelines confirmed from professional references.
- c. Use of certified subcontractors for environmental remediation including:
 - 1) Insulation: contractor must be on Xcel Energy approved contractor list
 - 2) Asbestos: contractor must be certified for asbestos removal by the State of Minnesota
 - 3) Lead: either general contractor or subcontractor must be certified for lead abatement by the State of Minnesota
 - 4) Radon: contractor must be on Minnesota Department of Health approved radon mitigation list.
- 4. **Bid Award Policy**
 - a. Contractors that meet the criteria for qualification above, yet have not worked with The Housing and Redevelopment Authority of Saint Paul, Minnesota on a Neighborhood Stabilization Program project previously will initially be awarded one house, even if the contractor is low bidder for more than one house.
 - b. Once the contractor demonstrates quality workmanship, financial capacity, and ability to perform timely completion, they may be awarded more than one house at the same time for subsequent bids on a case-by-case basis.
- 5. **Other Qualifications**
 - a. Each property has its own unique characteristics and challenges. Variables include items relating to environmental conditions, historic nature of structures, etc.
 - b. Depending on the specific property, there may be other qualifications needed by the bidder which will be specified by the HRA in its request for bids.

PART 3 POST AWARD REQUIREMENTS

3.01 CONSTRUCTION CONTRACT REQUIREMENTS

- A. The bidder agrees that, if selected by the HRA, the bidder will enter into a contract with the HRA no later than 30 calendar days from bid award and will submit the following information to the HRA as a condition to entering into that contract; refer to Bid Rehab Manual for attachments:
 - 1. Certificates of Insurance as required by the Construction Contract and proof of Insurance and Bonding.
 - 2. Final Sworn Construction Statement Affidavit and Sworn Construction Statement that list contractors, material suppliers, and subcontractors, who will work under the contract and the cost of their work.
 - 3. Proof of a valid license as a Residential builder in the State of Minnesota and proof of valid licenses as required by the City of Saint Paul for work to be done.
 - 4. Bidders may be required to submit payment and performance bonds as a condition of the construction contract. Verify with Scope Writer prior to submitting bid.
 - 5. Proof of compliance with requirements attached for Affirmative Action, Vendor Outreach Program, and Section 3, including an Acknowledgement and Final Section 3 Action Plan.
 - 6. Construction Schedule must be submitted to Paul Ormseth to enter into the Contract.
- B. Attendance of a Pre-Construction Conference
 - 1. The selected Contractor and all Subcontractors will be required to attend a Pre-Construction Conference.
 - 2. Time, date, and place of the Pre-Construction Conference will be announced by Paul Ormseth, LLC and/or HRA.
- C. Computerized System for Compliance Tracking and Reporting:
 - 1. The Contractor is required to use the B2Gnow/LCPtracker reporting system. Refer to attachment.

PART 4 WAGE REQUIREMENTS

4.01 THE FOLLOWING ARE WAGE REQUIREMENTS ASSOCIATED WITH THIS PROJECTS

- A. Federal Davis-Bacon and/or Little Davis-Bacon Wages are not required for this project.

END OF SECTION

SECTION 00 4101
HRA BID SUBMISSION DOCUMENTS

SECTION 1 GENERAL

1.01 BID SUBMISSION DOCUMENTS, LOCATED AT [HTTP://WWW.STPAUL.GOV/NSP](http://www.stpaul.gov/NSP)

- A. Bid Submittal Checklist
- B. Bid Cover Sheet
- C. Bid Proposal and Non-Collusive Affidavit
- D. Preliminary Section-3 Action Plan
- E. Contractor Application / Statement of Qualifications
- F. Itemized Cost Breakdown and Scope of Work Bid (Section 004102)

END OF SECTION

SECTION 00 4102

HRA LINE ITEM BID SHEET

PART 1 MANUAL BID SHEET - LINE ITEM BREAKDOWN OF WORK

DIVISION 02 - EXISTING CONDITIONS

022633 - Mold Assessment	\$ _____
024100 - Demolition	\$ _____
028200 - Asbestos Remediation	\$ _____
028313 - Lead Hazard Control Activities	\$ _____

DIVISION 03 - CONCRETE

033000 - Cast in Place Concrete	\$ _____
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DIVISION 04 - MASONRY

040100 - Maintenance of Masonry	\$ _____
042000 - Unit Masonry	\$ _____
042300 - Glass Unit Masonry	\$ _____

DIVISION 05 - METALS

057300 - Decorative Metal Railings	\$ _____
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DIVISION 06 - WOOD, PLASTICS AND COMPOSITES

061000 - Rough Carpentry	\$ _____
062000 - Finish Carpentry	\$ _____

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

072119 - Foamed-In-Place Insulation	\$ _____
072126 - Blown Insulation	\$ _____
072500 - Weather Barriers	\$ _____
072700 - Air Barrier System	\$ _____
073113 - Asphalt Shingles	\$ _____
074646 - Fiber Cement Siding	\$ _____
076200 - Sheet Metal Flashing and Trim	\$ _____
077123 - Manufactured Gutters and Downspouts	\$ _____

DIVISION 08 - OPENINGS

081100 - Exterior Insulated Metal Doors and Frames	\$ _____
081429 - Wood Doors	\$ _____
085213 - Metal-Clad Wood Windows	\$ _____
083323 - Overhead Garage Door	\$ _____

DIVISION 09 - FINISHES

090120 - Repair of Plaster and Gypsum Board	\$ _____
092116 - Gypsum Board Assemblies	\$ _____
093000 - Tiling	\$ _____
096219 - Laminate Flooring	\$ _____
096800 - Carpeting	\$ _____
099000 - Painting and Coating	\$ _____

DIVISION 10 - SPECIALTIES

105623 - Closet Storage Shelving \$ _____

DIVISION 11 - EQUIPMENT

113100 - HRA Residential Appliances \$ _____

DIVISION 12 - FURNISHINGS

121110 - HRA Mail Box and House Numbers \$ _____

121111 - Bathroom Furnishings \$ _____

123530 - Residential Casework \$ _____

DIVISION 22 - PLUMBING

223000 - Plumbing Equipment \$ _____

224000 - Plumbing Fixtures \$ _____

DIVISION 23 - HEATING, VENTILATING AND AIR CONDITIONING

230000 - Residential Ventilation \$ _____

235400 - Forced Air Furnace and Ducts \$ _____

236213 - Forced Air A/C \$ _____

DIVISION 26 - ELECTRICAL

261001 - Power, Wiring and Devices \$ _____

265101 - HRA Lighting \$ _____

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

281600 - Intrusion Detection \$ _____

DIVISION 31 - EARTHWORK

312200 - Grading \$ _____

DIVISION 32 - EXTERIOR IMPROVEMENTS

321313 - Concrete Paving \$ _____

323113 - Chain Link Fences and Gates \$ _____

329223 - Sodding \$ _____

329300 - Planting \$ _____

TOTAL \$ _____**END OF SECTION**

SECTION 01 0010
HRA GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 CONTRACTOR'S RESPONSIBILITY

- A. All labor, material, supplies, tools, or other costs or items needed for complete construction of the project, including permits, temporary facilities, safety, security and utilities during construction, are the responsibility of the Contractor.
- B. The General Contractor is responsible for the maintenance of the lawn and landscaping, cleanup and disposal of fallen leaves, and snow removal during the winter. This responsibility begins at the issuance of the notice to proceed and ends with approval of Final Completion.
- C. The General Contractor and each Subcontractor shall inspect the existing conditions that affect its work before starting. Commencing work signifies acceptance of the previous work. All measurements and dimensions indicated in the Drawings and Specifications are to be verified prior to bid submittal and construction.
- D. The General Contractor shall be responsible for the coordination of all subcontractors working on, or furnishing material for use on this project. In addition, the General Contractor shall be responsible for the coordination of all work performed under separate contracts.

1.02 CONTRACTOR'S USE OF PREMISES

- A. During the construction period the General Contractor and its Subcontractors shall have full use of the premises for construction operations, including use of the site. All use of the site shall be under control and supervision of the General Contractor.
- B. General Contractor and its Subcontractors will be limited to construction work between the hours of 7:00 am and 6:00 pm on weekdays and 8:00 am to 4:00 pm on Saturday. Work at any other times will be allowed only with the Owner's and Project Manager's consent.

1.03 MATERIALS & MATERIAL STORAGE

- A. The General Contractor shall provide all materials, hardware, and fixtures required to accomplish the Scope of Work, unless otherwise indicated.
- B. The General Contractor shall use materials specified throughout unless approved in writing by Owner and Project Manager before ordering and installing.
- C. The General Contractor is responsible for verification of all measurements. Materials transported to the job site and stored are the General Contractor's responsibility until installed and accepted by the Owner and Project Manager.
- D. The General Contractor shall deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
- E. Damaged or stolen materials and equipment must be replaced as part of the work at no additional cost to the Owner. Damaged property that is removed shall belong to the General Contractor, unless otherwise stated in writing.

PART 2 PERFORMANCE REQUIREMENTS

2.01 ENERGY CONSERVATION

- A. General
 - 1. This property must go through Xcel Energy's Home Performance with Energy Star program.
 - 2. This means that all insulation and HVAC work must be performed by Xcel Energy's approved contractor list.
 - 3. General Contractors that are on the Home Performance list may choose Subcontractors that are not on the list, but those General Contractors will be held responsible for all work completed.

4. The "Specifications for Energy Improvement Upgrades" provided by the Neighborhood Energy Connection (See appendix) are a part of the Scope of Work for this property.
 5. Any discrepancies between the Scope of Work and NEC's specifications are to be clarified during the bid process.
- B. Provide Energy Efficient Lighting
1. All fixtures should have energy efficient CFLs or LED lamps that are within the maximum wattage allowable.
 2. The Owner and Project Manager shall select specific locations of fixtures and switches in each area.
 3. All lighting fixtures will be purchased new, unless otherwise indicated in the scope of work.
 4. No plastic lighting fixtures are acceptable.
 5. No fluorescent tube light fixtures are acceptable in living spaces.
 6. Provide light bulbs for all fixtures. All light fixtures are to have color corrected bulbs. Light bulbs that are viewable within fixtures will be a globe or candelabra style CFL.
 7. Provide and install lighting fixtures and switches.
 8. Review fixtures with Owner and Project Manager prior to installation.
 9. All electrical outlets and cover plates are to be replaced throughout the building, unless otherwise indicated in the scope of work.

2.02 ENERGY EFFICIENT APPLIANCES

- A. All appliances must be purchased new and be Energy STAR certified or high efficiency models when Energy STAR certification is not possible.
- B. High-efficiency appliances meet the following standards:
- C. Clothes washers must have a CEE Tier 2 or higher, a minimum Energy Factor of 2.0 or greater, and a water factor 6.0 or less.
- D. Clothes Dryers must be a minimum 7.0 cubic feet capacity, have a sensor dry system, and have 5 Temperature Levels - High, Medium High, Medium, Low & Ultra Low
- E. Dishwashers must be CEE Tier 2 or higher, with a minimum Energy Factor of 0.68 or greater, and a maximum annual energy use of 325 kilowatt-hours or less.

2.03 LOW FLOW PLUMBING FIXTURES

- A. New plumbing fixtures should be water conserving fixtures with a faucet flow rate of 1.3 GPM or less and a commode flush rate of 1.2 GPF or less.

PART 3 PRICE AND PAYMENT PROCEDURES

3.01 SCHEDULE OF VALUES

- A. Form to be used: Sworn Construction Statement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Construction Manager for approval.
- C. Forms filled out by hand will not be accepted.

3.02 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Construction Manager for approval.
- C. Forms filled out by hand will not be accepted.
- D. Execute certification/pay application by signature of authorized officer.
- E. Submit two copies of each Application for Payment to Construction Manager.

PART 4 CONTRACT MODIFICATION PROCEDURES

4.01 HRA WINTER WORK POLICY

- A. The Housing and Redevelopment Authority of the City of St. Paul (HRA) recognizes that there are weather related exterior items that cannot be completed in winter conditions ("Weather Conditional Work"), including but not limited to:
 - 1. Exterior painting
 - 2. Sod
 - 3. Foundation plantings
 - 4. Rain garden installation
 - 5. Concrete sidewalks, steps, landings, curbs, garage slabs, and asphalt driveways
- B. The HRA defines winter conditions as "temperatures consistently below a high of 50 degrees Fahrenheit". Winter conditions are typically in effect from November 15th through April 15th each year, although there is potential for an earlier or later start and end date depending on weather.
- C. In the case of NSP homes where a notice to proceed is issued between October and February, the time parameter of winter conditions could mean that the entire timeline for construction completion (typically 90-150 days) is within winter conditions.
- D. It is the responsibility of the contractor to communicate, to the Owner, the exterior line items in the scope of work that are Weather Conditional Work as a component of the timeline submission required prior to issuance of a notice to proceed.
- E. Contractors are also responsible for ensuring that all Weather Conditional Work is completed within the manufacturer's or industry standards recommended temperature range.
- F. The Contractor is responsible for prioritizing Weather Related Work when winter conditions are not present, in order to complete the house within the construction timeline whenever possible.
- G. The HRA's objective is to ensure that remodeling work on NSP projects is substantially complete within the timeline for construction completion (90-150 days) so that the project can be issued a certificate of occupancy and sold to a new homeowner; the contractor is responsible for ensuring that temporary, structurally sound solutions are implemented when Weather Related Work will effect the ability to secure a Certificate of Occupancy.
- H. In the event that winter conditions are present throughout the 150 day construction contract period, the HRA will escrow 1 and 1/2 times the cost for Weather Conditional Work (150%), to be completed within 30 days of the end of winter conditions.

4.02 SUBSTITUTIONS

- A. Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the General Contractor after award of the Contract are considered to be requests for substitutions.
- B. Submit requests according to procedures required for change-order proposals.
- C. Substitution requests shall include a complete list of changes or modifications needed in the Scope of Work in order to accommodate the proposed substitution.
- D. Provide samples and product data, including drawings and descriptions of products as well as fabrication and installation procedures, where applicable or where requested by the Owner or Project Manager.
- E. Indicate the substitution's effect on the Contractor's Construction Schedule, if any. Indicate cost information, including a proposal of the net change, if any, in the Contract Sum. Acceptance will be in the form of a written Change Order signed by the Owner and Project Manager.

PART 5 COMPLIANCE INFORMATION AND REQUIRMENTS

5.01 SEE HRA NSP WEBSITE FOR COMPLIANCE REQUIREMENTS.

- A. <http://www.stpaul.gov/nsp>
- B. Review the document labeled: Section II - Compliance Information and Requirments.

1. It contains additional information on:
 - a. Insurance
 - b. B2Gnow/LCP Tracker, Contract Compliance Monitoring System
 - c. Vendor Outreach Program
 - d. Affirmative Action
 - e. Sustainable Green Policy
 - f. Section 3
 - g. Two Bid Policy
 - h. Limited English Policy
 - i. Xcel Energy Participating Contractors' List
 - j. Radon Mitigation Contractors' List

5.02 SECURITY PROCEDURES

- A. General Contractor is responsible for maintaining security of the site, including:
 1. locking buildings at the end of each work day;
 2. boarding window or door openings;
 3. installing security fencing;
 4. providing temporary barricades, bracing or railings;
 5. and any other work or facilities necessary to maintain a safe and secure site, including compliance with all health, safety, building, and other codes and laws.
- B. Any tools or materials or other property stored on the site prior to installation are the responsibility of the General Contractor and its Subcontractors are responsible for insuring their own such property against loss by theft or other cause.

5.03 JOB CONDITIONS

- A. The General Contractor shall notify the Owner and Project Manager of repair not covered in the Scope of Work that is necessary for satisfactory completion of the Project.
- B. Defects that become evident as work progresses shall be reported not concealed.
- C. Ensure safe passage of all employees during the course of demolition or other persons as necessary by erecting barriers, bracing, or other temporary supports as required.

5.04 SAFETY AND CLEAN UP

- A. The General Contractor must keep the site clean at all times during construction.
- B. In no event can debris be stored outside overnight unless it is inside a dumpster.
- C. All floors are to be picked up and kept broom clean at the end of the work day.
- D. No combustible debris shall be thrown, stored, or burned on the property, adjacent parcels, sidewalks, streets, or alleys.
- E. Debris created from work at the property must be disposed of immediately.
- F. Any debris caused by the General Contractor or its Subcontractor shall be removed from the work area in the General Contractor's containers and disposed of off site by the General Contractor.

PART 6 SPECIAL PROCEDURES

6.01 ASBESTOS ABATEMENT,

- A. If asbestos is found on this project follow the necessary requirements for proper abatement. A contractor must be licensed by the Minnesota Department of Health to perform asbestos-related work. Asbestos-related work includes the work area preparation, enclosure, removal, or encapsulation of asbestos-containing material.

6.02 LOW VOC, SEE SECTION 01 6116

6.03 LEAD BASED PAINT

- A. General Information

1. Projects funded in whole or in part with federal funds must comply with the "Regulation on Lead-Based Paint Hazards in Federally Owned Housing and Housing Receiving Federal Assistance".
 2. Properties built after 1/1/78 and properties needing emergency rehab assistance are exempt from Lead-Based Paint Regulation requirements.
 3. All projects receiving over \$25,000 of HUD funds per unit for rehabilitation, must abate all Lead-based paint hazards.
- B. Removal Procedures**
1. Risk Assessments:
 - a. A Risk Assessment must be completed by a licensed Lead-Based Paint Risk Assessor on all properties built before 1/1/78 (excluding emergency rehab cases).
 - b. The Owner or Project Manager arranges and pays for the Risk Assessment.
 - c. The Risk Assessment report will summarize the nature and scope of known lead-based paint hazards.
 - C. Licensed Lead Abatement Supervisor: Only General or Subcontractors who are State licensed Lead Abatement Supervisors are allowed to bid on projects involving lead hazard reduction work.
 - D. Project Plan: The General Contractor must prepare a written project plan and communicate it to the Owner and Project Manager. It shall include:
 1. Start-up date and how long the project is expected to last.
 2. Areas to be abated and precautions to take.
 3. A warning to pay attention to the caution signs that are posted by the General Contractor around the project site.
 4. Location of areas that may be restricted.
 - E. The selected General Contractor performs the work, using lead hazard control measures where indicated in the Scope of Work.
 - F. The General contractor will notify the Project Manager when work is complete.
 - G. A Clearance Test for lead-based paint dust is required upon completion of the Lead Based Paint Hazard Reduction Project Plan.
 1. The Clearance Test must be performed by a State licensed Clearance Examiner.
 2. It is the responsibility of the General Contractor to arrange and pay for any and all of the Clearance Tests that may be required. If the Clearance Test indicates lead levels lower than acceptable amounts, the General Contractor's lead reduction and control work is complete and the final construction payment application may be processed.
 3. If the Clearance Test is found to contain lead levels above an acceptable amount, the General Contractor must clean the work area again and request another Clearance Test at no additional cost to the Owner, until the Clearance Test is passed.
 4. The Final payment application will not be processed until all areas are determined to be free of hazardous lead levels.
 - H. Additional Information:
 1. General Contractor must obtain and review the following documents, which provide more detailed information on lead paint hazards and reduction and control measures:
 - a. Minnesota Department of Lead program, "Safely Working with Lead While Remodeling the Older Home" pamphlet series. 1-651-215-0890.
 - 1) U.S. Environmental Protection Agency, "Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools" 21 page booklet.
<<http://www.epa.gov/lead/pubs/rrpamph.pdf>>
 - 2) U.S. Department of Housing and Urban Development, "Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work:". English and Spanish versions available.
<http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/healthyhomes/lead>

- 3) U.S. Department of Housing and Urban Development, "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing". October 1996. <http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/lbp/hudguidelines>
- 4) U.S. Environmental Protection Agency, "Model Lead-Based Paint Abatement Worker Training Course." English and Spanish versions available. <<http://www.epa.gov/lead/pubs/abateworker.htm>>
- 5) U.S. Environmental Protection Agency, "Lead Safety for Renovation, Repair, and Remodeling: Student Manual". <http://www.epa.gov/lead/pubs/rrp_8hr_studentmanual_feb09.pdf>

I. Abatement:

1. Component Replacement: The removal of building components that contain lead-based paint. It is most appropriate for items such as doors, windows, trim, and cabinets.
2. Paint Removal: The separation of paint from the substrate using safe heat, chemical, or abrasive methods. It may be done on- or off-site. Abrasive methods can create a great deal of dust, are the most hazardous, and require the greatest care and most thorough clean-up.
3. Enclosure: The installation of a barrier (such as gypsum board or paneling) that is mechanically attached to the building component, with all edges and seams sealed to prevent escape of lead-based paint dust. It is most appropriate for large surfaces, such as walls, ceilings, floors, and exteriors.
4. Encapsulation: The application of a liquid or adhesive material that covers the component and forms a barrier that makes the lead-based paint surface inaccessible by relying upon adhesion. It may be appropriate for many kinds of smooth surfaces but it cannot be used effectively on friction surfaces, surfaces in poor condition, or surfaces that may become wet. It also must be compatible with existing paint.
5. Soil Removal: The removal of at least the top six inches of topsoil is adequate for most projects. In areas with heavy contamination, up to two feet may have to be removed, and must be disposed of using proper waste management techniques that comply with local requirements. The maximum lead concentration in replacement soil shall not exceed 200 ug/g. Sod or seeding of new soil should occur.
6. Soil Cultivation: The mixing of low lead soil with high lead soil is an appropriate method if the average lead concentration of the soil to be abated is below 1,500 ug/g. Thorough mixing is required, and pilot testing of various techniques may be needed to ensure that thorough mixing does occur.
7. Paving: The covering of highly contaminated soil with high quality concrete or asphalt. Paving is common in high traffic areas but not appropriate in play areas. The need for uncontaminated replacement soil is eliminated as is waste disposal costs. Paving often turns out to be the most economical recourse, despite its aesthetic disadvantages.

6.04 WASTE MANAGEMENT, SEE SECTION 01 7419

PART 7 SUBMITTALS

7.01 GENERAL

- A. Coordinate preparation and processing of submittals with performance of construction activities.
- B. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
- C. Provide the following submittals required for performance of the Work, including the following:
 1. Administrative Submittals.
 2. Construction Schedule
 3. Samples/Product Data.

7.02 ADMINISTRATIVE SUBMITTALS

- A. Provide as required in the Contract Documents. Such submittals include, but are not limited to, the following:

1. Sworn Construction Statement
2. Required permits.
3. Applications for Payment.
4. Insurance certificates.
5. List of subcontractors.

7.03 CONSTRUCTION SCHEDULE

- A. A construction schedule must be submitted to the Owner and Project Manager with the bid, unless requested otherwise in writing. Construction shall be completed within 150 days of notice to proceed.

7.04 SAMPLES/PRODUCT DATA:

- A. Submit Samples as specified to be physically identical with the material or product proposed.
- B. Samples include partial sections of manufactures or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
- C. Provide product samples and/or product data for the following where included in the scope of work and for any other requirements mentioned in the specifications or drawings:
 1. Paint colors.
 2. Masonry and mortar color samples.
 3. Windows.
 4. Doors and hardware.
 5. Bathroom accessories.
 6. Kitchen cabinets.
 7. Plumbing fixtures.
 8. Lighting fixtures.
 9. Foundation waterproofing.
 10. Stair railings.
 11. Tile.
 12. Carpet.
 13. Interior trim samples.
 14. Exterior trim and siding samples.

END OF SECTION

SECTION 01 2000
PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.

1.02 PAYMENT DOCUMENTS

- A. All documents required to create a complete Payment Application can be downloaded from <https://sites.google.com/site/nspconstructiondocs/>
- B. Payment Application form to be used: Application and Certificate for Payment provided by the HRA.
 - 1. Columns A, B, C should not change during the course of construction and should directly relate to the Sworn Construction Statement provided at the start of construction. As draws progress, columns D, E and F change to reflect work completed.
- C. Additional Documents to be submitted with each pay application:
 - 1. Monthly Employment Utilization (MEU) Form
 - 2. Identification of Prime and Subcontractor Form
 - a. An updated Sub ID sheet must be attached to help HR/EEO staff track subcontractor utilization.
 - 3. B2Gnow
 - a. Ensure each subcontractor is logging into the B2Gnow system and logging payments received.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement. The Owner will process the payment within 30 days.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Construction Manager for approval.
- C. Forms filled out by hand will not be accepted.
- D. Applications for payment must be signed by an authorized officer of the general construction firm
- E. Use data from approved Sworn Construction Statement. Provide dollar value in each column for each line item for portion of work performed.
- F. Submit one signed copy of the Application for Payment, complete with all required attachments, to the Construction Manager.

1.04 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Price or Contract Time, Construction Manager will issue instructions directly to Contractor.
- B. For changes for which advance pricing is desired, Construction Manager will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within ____ days.
- C. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
- D. Execution of Change Orders: Construction Manager will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- E. After execution of Change Order, promptly revise Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price.

1. Change orders shall be listed as lump sums on the bottom of the pay application and referred to on the cover sheet.
2. Include each line item of the change order as a separate line item in the pay application and the amount of the contractor adjustments.

1.05 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Price, previous payments, and sum remaining due.
- B. Additional documents:
 1. Final lien waivers from all subcontractors/material providers
 2. Monthly Employment Utilization (MEU) Form
 3. Project Employment Utilization (PEU) for City Funded Projects
 4. Lead Clearance
 5. NEC Certificate of Completion
 6. Waste Management Plan Report
 7. Permit Sign-offs/Certificate of Code Compliance
 8. Winter Work/Weather Related Work Escrow
 9. Certificate of Substantial/Final Completion
- C. See Section 01 7700 - Closeout Procedures and Submittals, for additional information.

END OF SECTION

**SECTION 01 2300
ALTERNATES**

PART 1 GENERAL

1.01 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each alternate.

1.02 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: SOLID SURFACE COUNTERTOP: Provide solid surface countertop in kitchen in lieu of plastic laminate.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- B. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. Do not use products having any of the following characteristics:
- C. Regionally-Sourced Products:
 - 1. Overall Project Requirement: Provide materials amounting to a minimum of 10 percent of the total value of all materials (excluding plumbing, HVAC, electrical, elevators, and other equipment) that have been extracted, harvested, or recovered, as well as manufactured, within a radius of 500 miles (805 km) from the project site.
 - a. This provision is applicable to LEED Credit MR 5.1; show quantity on LEED report.
 - 2. Specific Product Categories: Provide regionally-sourced products as specified elsewhere.

2.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- C. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- D. Substitution Submittal Procedure:
 - 1. Submit two copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. The Construction Manager will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Prevent contact with material that may cause corrosion, discoloration, or staining.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 6116

VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. Implement the following procedures in an effort to improve indoor air quality during Owner's occupancy.
- B. Construction Indoor Air Quality (IAQ) Management
 - 1. Provide low-emitting products

1.02 SECTION INCLUDES

- A. VOC restrictions for product categories listed below under "DEFINITIONS."
- B. All products of each category that are installed in the project must comply; Owner's project goals do not allow for partial compliance.

1.03 DEFINITIONS

- A. VOC-Restricted Products: All products of each of the following categories when installed or applied on-site in the building interior:
 - 1. Adhesives, sealants, and sealer coatings.
 - 2. Carpet.
 - 3. Carpet cushion.
 - 4. Resilient floor coverings.
 - 5. Wood flooring.
 - 6. Paints and coatings.
 - 7. Insulation.
 - 8. Gypsum board.
 - 9. Acoustical ceilings and panels.
 - 10. Cabinet work.
 - 11. Wall coverings.
 - 12. Composite wood and agrifiber products used either alone or as part of another product.
 - 13. Other products when specifically stated in the specifications.
- B. Interior of Building: Anywhere inside the exterior weather barrier.
- C. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- D. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

1.04 REFERENCE STANDARDS

- A. CAL (CHPS LEM) - Low-Emitting Materials Product List; California Collaborative for High Performance Schools (CHPS); current edition at www.chps.net/.
- B. CAL (VOC) - Standard Practice for the Testing of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers (including Addendum 2004-01); State of California Department of Health Services; 2004
- C. CRI (GLCC) - Green Label Testing Program - Approved Product Categories for Carpet Cushion; Carpet and Rug Institute; Current Edition.
- D. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute; Current Edition.
- E. GEI (SCH) - GREENGUARD "Children and Schools" Certified Products; GREENGUARD Environmental Institute; current listings at www.greenguard.org.
- F. GreenSeal GS-36 - Commercial Adhesives; Green Seal, Inc.; 2000.
- G. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

- H. SCS (CPD) - SCS Certified Products; Scientific Certification Systems; current listings at www.scs-certified.com.

1.05 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All VOC-Restricted Products: Provide products having VOC content of types and volume not greater than those specified in State of California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers.
1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Current GREENGUARD Children & Schools certification; www.greenguard.org.
 - b. Current Carpet and Rug Institute Green Label Plus certification; www.carpet-rug.org.
 - c. Current SCS Floorscore certification; www.scs-certified.com.
 - d. Current SCS Indoor Advantage Gold certification; www.scs-certified.com.
 - e. Product listing in the CHPS Low-Emitting Materials Product List at www.chps.net/manual/lem_table.htm.
 - f. Current certification by any other agencies acceptable to CHPS.
 - g. Report of laboratory testing performed in accordance with CHPS requirements for getting a product listed in the Low-Emitting Materials Product List; report must include laboratory's statement that the product meets the specified criteria.
- B. Adhesives and Joint Sealants: Provide only products having volatile organic compound (VOC) content not greater than required by South Coast Air Quality Management District Rule No.1168.
1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
- C. Aerosol Adhesives: Provide only products having volatile organic compound (VOC) content not greater than required by GreenSeal GS-36.
1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Current GreenSeal Certification.
- D. Paints and Coatings applied within building waterproof envelope:
1. Comply with VOC Content limits (as noted in Criterion 6.1) of Green Seal Standard GS-11 "Paints," First Edition; Standard GC-03 "Anti Corrosive Paints," and MPI GPS-2-8, as follows (in grams/Liter):
 - a. Flat: 50
 - b. Non-flat: 50
 - c. Anti-Corrosive and Anti Rust: 250
 - d. Floor Coatings: 100
- E. Carpet and Adhesive: Provide products having VOC content not greater than that required for CRI Green Label Plus certification.
1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Current Green Label Plus Certification.
 - b. Report of laboratory testing performed in accordance with requirements.
- F. Carpet, Carpet Cushion, and Adhesive: Provide products having VOC content as specified in Section 09 6800.
- G. Carpet Cushion: Provide products having VOC content not greater than that required for CRI Green Label Plus certification.
1. Evidence of Compliance: Acceptable types of evidence are:

- a. Current Green Label Plus Certification.
 - b. Report of laboratory testing performed in accordance with requirements.
- H. Composite Wood and Agrifiber Products and Adhesives Used for Laminating Them: Provide products having no added urea-formaldehyde resins.
 - 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Current SCS "No Added Urea Formaldehyde" certification; www.scs-certified.com.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
- I. Other Product Categories: Comply with limitations specified elsewhere.

PART 3 EXECUTION

3.01 GENERAL

- A. Incorporate procedures and processes during construction and prior to occupancy as described herein

3.02 FIELD QUALITY CONTROL

- A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.
- B. All additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

SECTION 01 7000
EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 QUALIFICATIONS

- A. For survey work, employ a land surveyor registered in Minnesota and acceptable to Construction Manager. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.

1.02 PROJECT CONDITIONS

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
- D. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- E. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- F. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.

- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Construction Manager of any discrepancies discovered.
- C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- D. Promptly report to Construction Manager the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Construction Manager.
- F. Utilize recognized engineering survey practices.
- G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, ground floor elevations.
- H. Periodically verify layouts by same means.
- I. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove samples of installed work for testing when requested.
 - 8. Remove and replace defective and non-conforming work.
- C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

- F. Restore work with new products in accordance with requirements of Contract Documents.
- G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material , to full thickness of the penetrated element.
- I. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.08 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.09 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, and drainage systems.

- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.10 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
- B. Review Section 01 7700 CLOSEOUT PROCEDURES AND SUBMITTALS.
- C. Notify Construction Manager when work is considered ready for Substantial Completion.
- D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Construction Manager's review.
- E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.
- F. Notify Construction Manager when work is considered finally complete.
- G. Complete items of work determined by Construction Manager's final inspection.

END OF SECTION

SECTION 01 7419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. HRA Policy for this project is dependent on diversion of 50 percent, by weight, of potential landfill trash/waste by recycling and/or salvage.
- E. The following recycling incentive programs are mandatory for this project; Contractor is responsible for implementation:
- F. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
- G. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.03 SUBMITTALS

A. ACTION SUBMITALS

1. CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT(CWM) PLAN

- a. Analysis of estimated job-site waste to be generated, including types and quantities of compostable, recyclable, and salvageable materials.
- b. Description of means and methods to achieve 50 percent diversion requirement for compostable, recyclable, and salvageable materials, including those that may be donated to charitable organizations.
- c. Identification of the carpet product's composition as polymer, nylon or polypropylene
- d. Identification of recycling contractors and haulers proposed for use in the project and locations accepting construction waste materials or entities providing related services.

B. FINAL WASTE MANAGEMENT REPORT: General Contractor is responsible to submit at completion of construction and prior to contract close-out, in electronic format.

- 1. All information required in Waste Management Progress Reports
- 2. Legible copies of on-site logs, manifests, weight tickets, and receipts.
- 3. Final calculations, including total amount (by weight or volume) of diverted construction and demolition waste, and the total amount (by weight or volume) of landfilled waste.

C. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.

- 1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
- 2. Submit Report on a form acceptable to Owner.
- 3. Landfill Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project disposed of in landfills.
 - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
- 4. Incinerator Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards (cubic meters), of trash/waste material from the project delivered to incinerators.
 - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
- 5. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.
 - b. Amount, in tons or cubic yards (cubic meters), date removed from the project site, and receiving party.

- c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
- 6. Material Reused on Project: Include the following information for each:
 - a. Identification of material and how it was used in the project.
 - b. Amount, in tons or cubic yards (cubic meters).
 - c. Include weight tickets as evidence of quantity.
- 7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.
- D. Recycling Incentive Programs:
 - 1. Where revenue accrues to Contractor, submit copies of documentation required to qualify for incentive.
 - 2. Where revenue accrues to Owner, submit any additional documentation required by Owner in addition to information provided in periodic Waste Disposal Report.

PART 2 PRODUCTS <NOT USED>

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 6000 for waste prevention requirements related to delivery, storage, and handling.
- B. See Section 01 7000 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor and Construction Manager.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 - 1. Pre-bid meeting.
 - 2. Pre-construction meeting.
 - 3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. Provide containers as required.
 - 2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

3.03 UNACCEPTABLE METHODS OF WASTE DISPOSAL

- A. Burning or incinerating on or off project site
- B. Burying on project site, other than fill.
- C. Dumping or burying on other property, public or private, other than official landfill.
- D. Illegal dumping or burying.

END OF SECTION

SECTION 01 7700
CLOSEOUT PROCEDURES AND SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

1.02 SUBMITTALS

- A. All documents required to create a complete Final Payment Application can be downloaded from <https://sites.google.com/site/nspconstructiondocs/>
- B. Notify Construction Manager when work is considered ready for Substantial Completion.
 - 1. Make sure the work is mostly complete and cleaned for inspection.
- C. Substantial Completion Submittals:
 - 1. Project Record Documents: Submit documents listed below to Construction Manager:
 - a. Final Pay Application
 - b. Monthly Employment Utilization (MEU) Form
 - c. Project Employment Utilization (PEU) for City Funded Projects
 - d. Lead-based Paint Hazard Clearance Testing
 - e. Energy Modeling/NEC Compliance Report
 - f. Final Waste Management Report, see Section 01 7419 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
 - g. Permit Closeout/Code Compliance
 - h. Winter Work/Weather Related Work Escrow
 - i. Final Lien Waivers
 - j. Material Allowance Reconciliation Change Order (if necessary).
- D. Notify Construction Manager when work is considered finally completed. All Punch List items shall be completed and approved by Construction Manager and HRA Project Manager.
- E. Final Completion Submittals:
 - 1. Project Record Documents: Submit documents listed below to Construction Manager:
 - a. Building Maintenance Manual and Warranty documents for following:
 - 1) Appliance and building systems
 - (a) HVAC equipment
 - (b) Lighting equipment
 - (c) Kitchen and Laundry Appliance Manuals
 - 2) Water-using equipment and controls installed:
 - (a) Hot water delivery system(s)
 - (b) Toilets
 - (c) Faucets
 - (d) Shower head(s)
 - (e) Dishwasher
 - (f) Clothes washer
 - b. Signed Certificate of Substantial Completion
 - c. Punch List Items Completed

PART 3 EXECUTION

2.01 LEAD-BASED PAINT HAZARD CLEARANCE TESTING

- A. Where lead-based paint hazard control or reduction work has been performed by the General Contractor, the General Contractor will contact a certified third party Clearance Technician from Ramsey County Department of Public Health or other certified testing agency for clearance testing.

2.02 ENERGY MODELING (NEC)

- A. Contractor must work with the Neighborhood Energy Connection (NEC) who will:
 - 1. Create an energy model with the building plans and specifications to show the building's projected energy performance in the design stages

2. Conduct a mid-construction pre drywall thermal enclosure inspection
3. Verify the final performance of the building with performance testing

2.03 OPERATION AND MAINTENANCE MANUALS

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- B. Prepare data in the form of an instructional manual.

END OF SECTION

SECTION 01 8113
SUSTAINABLE DESIGN REQUIREMENTS

PART 1 GENERAL

1.01 ENERGY CONSERVATION

- A. This property must go through Xcel Energy's Home Performance with Energy Star program.
 - 1. All insulation and HVAC work must be performed by Xcel Energy's approved contractor list.
 - 2. General Contractors that are on the Home Performance list may choose Subcontractors that are not on the list, but those General Contractors will be held responsible for all work completed.
 - 3. General Contractors will be responsible for submitting documentation required of the Home Performance with Energy Star program and will be responsible for achieving Energy Improvements outlined by Neighborhood Energy Connection.
 - 4. The "Specifications for Energy Improvement Upgrades" provided by the Neighborhood Energy Connection (See appendix) are a part of the Scope of Work for this property.
 - 5. Any discrepancies between the Scope of Work and NEC's specifications are to be clarified during the bid process.
- B. Energy Efficient Lighting
 - 1. The Owner/Project Manager shall select specific locations of fixtures and switches in each area.
 - 2. All lighting fixtures will be purchased new, unless otherwise indicated.
 - 3. No plastic lighting fixtures are acceptable.
 - 4. No fluorescent tub light fixtures are acceptable in living spaces.
 - 5. Provide Energy Star certified CFL or LED light bulbs for all fixtures.
 - 6. All light fixtures are to have color corrected bulbs.
 - 7. Light bulbs that are viewable within fixtures will be a globe or candelabra style CFL.
 - 8. Provide and install lighting fixtures and switches.
 - 9. Review fixtures with Owner prior to installation.
 - 10. All electrical outlets and cover plates are to be replaced throughout the building.
- C. Energy Efficient Appliances
 - 1. All appliances must be purchased new and be Energy Star certified or high efficiency models when Energy Star certification is not possible.
 - 2. High-efficiency appliances meet the following standards

1.02 QUALITY ASSURANCE

- A. The Neighborhood Energy Connection (NEC), through its Peak Performace Homes custom consulting program, certifies independent consultants who provide developers with specific information about how to increase the energy efficiency of thier buildings.

PART 2 PRODUCTS

2.01 LOW-EMITTING MATERIALS

- A. Cabinet Materials: Low VOC
 - 1. Provide wood cabinets with self closing hinges and adjustable shelves from the Schrock Select (available at Menards), Mid-Continent Cabinetry (available at All Inc), or MINNCOR (available at MINNCOR) design lines or approved equal.
 - 2. Cabinets are to have plywood sides and bases.
 - 3. Drawer boxes shall be plywood with dovetail joinery.
 - 4. Cabinets to be constructed with maple; full overlay doors and flat or 5 piece. Alternative styles may be approval by the HRA.

PART 3 EXECUTION

3.01 CONSTRUCTION WASTE MANAGEMENT

- A. Comply with Construction Waste Management and Disposal Plan. Section 01 7419

3.02 CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT

- A. Change all air filters regularly during construction with filters specified for the specific furnace.
 - 1. Replace all air filters immediately prior to Substantial Completion with the specified permanent filters.

END OF SECTION

SECTION 02 2633
MOLD ASSESSMENT

PART 1 GENERAL

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1.01 CONTRACTOR RESPONSIBILITIES

- A. Provide all labor, equipment, material supervision and subcontracting to complete a post construction mold test.

1.02 SUBMITTALS

- A. Proof that the Contractor is qualified to complete mold testing in the State of Minnesota.
- B. Test Reports: Visual Inspection Report and Air Quality Report post rehab.

PART 2 PRODUCTS <NOT USED>

PART 3 EXECUTION

3.01 LOCATIONS

- A. Review the Code Compliance report, included in this Manual.

END OF SECTION

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

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1.01 LOCATIONS

A. SITE:

1. Remove Garage structure and slab entirely, including the addition attached to the original Garage structure. Siding, soffit and trim are lead containing materials.
2. Remove all concrete paving and pavers on the property and out to the public sidewalk.
3. Remove all bituminous paving and gravel sub base on the property and out to the alley pavement line.
4. Remove all chain link fencing on the property and along the east and west lot lines. Remove volunteer trees and brush growing in the fence.
5. Remove concrete steps, landing, foundation and railing at front entry and rear entry.
6. Remove concrete steps, landing and foundation at side entry.

B. EXTERIOR:

1. Remove the two-story addition on the southwest corner of the house entirely, including the foundation for the first floor/deck structure. Stucco, wood components, windows and doors are lead containing materials.
2. Remove the two-story addition on the northwest corner of the house entirely, including the foundation and the original front entry vestibule. Stucco, wood components, windows and doors are lead containing materials. Remove finish on what will be the exterior exposed walls of the remaining structure, down to the original exterior wood sheathing.
3. Remove brick chimney entirely from first floor to top above roof. The existing basement section of the chimney is to remain due to its connection to the existing foundation wall.
4. Remove all existing roofing materials on house down to sheathing.
5. Remove all gutters and downspouts on house.
6. Remove all windows down to rough openings, including interior and exterior trim, and including attic windows. Windows are lead containing materials.
7. Remove all Basement windows down to masonry openings. Windows are lead containing materials.
8. Remove all existing stucco finish and wood or wrapped trim on house. Temporarily detach electrical service mast and meter from siding and resecure after new siding is installed. Stucco and wood components are lead containing materials.
9. Remove all existing fascia and soffit trim on house. Wood soffits are lead containing materials.
10. Remove all exterior doors and frames entirely. There are 5 exterior doors. Painted wood doors, frames and trim are lead containing materials.
11. Remove portion of exterior wall at Dining to convert existing window opening to exterior door opening.
12. Modify window rough openings to enlarge window sizes as indicated on the Drawings.

C. INTERIOR:

1. Remove boiler and 2 water heaters.
2. Remove all hot water heat piping and radiators throughout the house. This system will be abandoned and replaced with forced air HVAC system.
3. Remove thermostat.
4. Remove two of three existing gas meters.
5. Remove all plumbing supply and drain piping throughout the house back to house connections at mains.
6. Remove all plumbing vent piping throughout the house.
7. Remove doorbell chime and doorbell at front entry.
8. Remove all electrical wiring, devices and light fixtures throughout the interior and exterior of the house.

9. Remove and abandon wiring and devices on walls that remain in place after the two story additions are removed. These walls become exterior walls in the reconfigured floor plans.
10. Remove all existing smoke detectors.
11. Remove washer, dryer, utility tub, miscellaneous shelving, brackets and debris throughout the Basement.
12. Remove pegboard panels at north Basement wall, back to foundation wall.
13. Remove rubble and earth in the Basement crawl space to provide minimum 30" clear space below the floor joists.
14. Remove existing rear stairway from second floor to rear entry door entirely, including stringers and finished ceiling below the stairway. This stairway is abandoned in the reconfigured floor plan. Wood stair components, trim and painted walls are lead containing materials.
15. Remove wood shelving on wall at Basement stairway.
16. Remove winding risers, treads and stringers at top of stairway to second floor. This portion of stair to be reconstructed as straight run.
17. Remove handrail and railing wall at top of stairway to second floor.
18. Remove all finish flooring throughout the house, down to original wood strip flooring or subfloor in areas where there is no original wood strip flooring.
19. Remove all base trim, casing trim and miscellaneous trim throughout the house.
20. Remove all interior doors, frames and hardware. Wood doors on second floor are lead containing materials.
21. Remove all window treatment hardware and window blinds throughout the house.
22. Remove all closet rods, shelves and hooks from all closets.
23. Remove soffits in Kitchens.
24. Remove ceramic tile backsplash in Kitchens. Tile on first floor Kitchen walls is a lead containing material.
25. Remove all existing Kitchen cabinets, countertops, and appliances in both Kitchens.
26. Remove portions of interior walls for reconfiguration of first and second floors as indicated on the plan drawings.
27. Gut both Bathrooms entirely down to subfloor, wall studs and ceiling joists, including all electrical and plumbing. Second floor bathtub and ceramic floor tile are lead containing materials.
28. Remove dropped drywall ceiling and framing for dropped ceiling on the entire first floor. The new finished ceiling for the first floor will be restored at the original ceiling height at bottom of second floor joists.

1.02 SECTION INCLUDES

- A. Selective demolition of building elements for alteration purposes.

1.03 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- B. Section 01 7419 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

1.04 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Company specializing in the type of work required.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 1. Obtain required permits.

2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 3. Protect hardwood floors for possible refinishing later.
 4. Provide, erect, and maintain temporary barriers and security devices.
 5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 6. Do not close or obstruct roadways or sidewalks without permit.
 7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
 - C. Protect existing structures and other elements that are not to be removed.
 1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
 - D. If hazardous materials are discovered during removal operations, stop work and notify Construction Manager and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
 - E. Perform demolition in a manner that maximizes salvage and recycling of materials.
 1. Inform Project Manager of potential strategies to reuse construction material.
 - a. Only move forward with reusing of construction materials with Project Manager's consent.
 2. Dismantle existing construction and separate materials.
 3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.02 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.03 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 1. Verify that construction and utility arrangements are as shown.
 2. Report discrepancies to Construction Manager before disturbing existing installation.
 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

- B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
- D. Services (Including but not limited to Site, Building Interior, Building Exterior, HVAC, Plumbing, and Electrical): Remove existing systems and equipment as indicated.
- E. Protect existing work to remain.

3.04 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Remove from site all materials not to be reused on site; comply with requirements of Section 01 7419 - Waste Management.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 02 8200
ASBESTOS REMEDIATION

PART 1 GENERAL

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1.01 LOCATIONS

- A. Review the Asbestos report, included in this Manual, for locations.
- B. Asbestos has been identified at the following locations Chimney mortar patch in Basement where flues enter the chimney and in pipe insulation in the Basement crawl space.

1.02 DESCRIPTION OF WORK AND CONTRACTOR RESPONSIBILITIES

- A. Provide all labor, equipment, material supervision and subcontracting for the removal and disposal of all Asbestos-Containing Material (ACM) as specified in the attached Asbestos Test.
- B. When work areas include both friable and nonfriable types of ACM, Contractor's shall prepare work area using procedures for friable asbestos removal.

1.03 SUBMITTALS

- A. Proof that the Contractor is qualified to perform Asbestos Remediation in the State of Minnesota.
- B. Test Reports: Indicate Complete Remediation of Project.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION -- NOT USED

END OF SECTION

SECTION 02 8313
LEAD HAZARD CONTROL ACTIVITIES

PART 1 GENERAL

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1.01 GENERAL INFORMATION

- A. Projects funded in whole or in part with federal funds must comply with the "Regulation on Lead-Based Paint Hazards in Federally Owned Housing and Housing Receiving Federal Assistance." As a component of Title X, Sections 1012 and 1013, rehabilitation projects receiving more than \$25,000 of federal funds must abate all lead.
- B. Properties built after 1/1/78 and properties needing emergency rehab assistance are exempt from Lead-Based Paint Regulations.

1.02 LOCATIONS

- A. Review the Lead Report, attached in this Manual. Locations where lead has been identified in the lead report are listed below, with references to the appropriate specification sections that define the expected level of finish.
 - 1. All wood window components, both painted and metal wrapped, and metal troughs at windows. See Demolition 02 4100 and Metal Clad Wood Windows 08 5213.
 - 2. Wood door at second floor Bedroom 1. See Demolition 02 4100 and Wood Doors 08 1429.
 - 3. Painted wood baseboard at Front Stair to second floor. See Demolition 02 4100 and Finish Carpentry 06 2000.
 - 4. Wood door at second floor Kitchen. See Demolition 02 4100.
 - 5. Ceramic tile walls at first floor Kitchen. See Demolition 02 4100.
 - 6. Bathtub and ceramic tile floor in second floor Bathroom. See Demolition 02 4100.
 - 7. Painted wood baseboard, skirtboard, stringer and drywall walls and back stair to second floor. See Demolition 02 4100.
 - 8. Vinyl base trim at second floor porch. See Demolition 02 4100.
 - 9. Painted wood door, door components and door threshold at second floor Porch. See Demolition 02 4100.
 - 10. All painted stucco walls and painted wood soffits at exterior of house and in porches. See Demolition 02 4100.
 - 11. Painted wood siding, soffit and trim at Garage. See Demolition 02 4100.
 - 12. Soil: Regrade site. See Grading 31 2200.
- B. A Licensed Lead Abatement Supervisor shall provide a project plan that addresses the subject surfaces in order to achieve the desired finished product defined in the noted specification sections.
- C. The General Contractor is responsible for ensuring that the project plan is implemented so that it meets the abatement requirements as defined in federal and state statutes.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Provide a price for the appropriate methods of abatement required by this scope of work.

1.04 SUBMITTALS

- A. Project Plan: The General Contractor must prepare a written project plan and communicate it to the Construction Manager and Project Manager. It shall include:
 - 1. Start-up date and how long the project is expected to last.
 - 2. Areas to be abated and precautions to take.
 - 3. A warning to pay attention to the caution signs that are posted by the General Contractor around the project site.
 - 4. Location of areas that may be restricted.
- B. Test Reports: Indicate Lead Based Paint Clearance.
 - 1. Submitted at final draw

1.05 QUALITY ASSURANCE

- A. Licensed Lead Abatement Supervisor: Only General or Subcontractors who are State licensed to conduct lead hazard reduction work are allowed to bid on projects involving lead hazard reduction work. See Minnesota Statutes 144.9501-144.9512 and Minnesota Rules 4761.2000-4761.2700 for applicable safety precautions, disposal regulations, and other compliance regulations that apply to abatement activities.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 ABATEMENT

- A. When the Risk Assessment process determines that a Project contains a lead-based paint hazard, the General Contractor shall comply with the abatement measures defined by the following:
 - 1. HUD 24 CFR Part 35 Subpart A through R 35.1325:
 - a. http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/enforcement/lshr
 - 2. EPA 40 CFR 745.227(e).
 - a. <http://www.gpo.gov/fdsys/pkg/CFR-2011-title40-vol31/pdf/CFR-2011-title40-vol31-sec745-227.pdf>.
 - 3. Minnesota Statutes 144.9501-144.9512 and Minnesota Rules 4761.2000-4761.2700
 - a. <http://www.health.state.mn.us/divs/eh/lead/rule.html>
- B. Definitions:
 - 1. Component Replacement: The removal of building components that contain lead-based paint. It is most appropriate for items such as doors, windows, trim, and cabinets.
 - 2. Paint Removal: The separation of paint from the substrate using safe heat, chemical, or abrasive methods. It may be done on- or off-site. Abrasive methods can create a great deal of dust, are the most hazardous, and require the greatest care and most thorough clean-up.
 - 3. Enclosure: The installation of a barrier (such as gypsum board or paneling) that is mechanically attached to the building component, with all edges and seams sealed to prevent escape of lead-based paint dust. It is most appropriate for large surfaces, such as walls, ceilings, floors, and exteriors.
 - 4. Encapsulation: The application of a liquid or adhesive material that covers the component and forms a barrier that makes the lead-based paint surface inaccessible by relying upon adhesion. It may be appropriate for many kinds of smooth surfaces but it cannot be used effectively on friction surfaces, surfaces in poor condition, or surfaces that may become wet. It also must be compatible with existing paint.
 - 5. Soil Removal: The removal of at least the top six inches of topsoil is adequate for most projects. In areas with heavy contamination, up to two feet may have to be removed, and must be disposed of using proper waste management techniques that comply with local requirements. The maximum lead concentration in replacement soil shall not exceed 200 ug/g. Sod or seeding of new soil should occur.
 - 6. Soil Cultivation: The mixing of low lead soil with high lead soil is an appropriate method if the average lead concentration of the soil to be abated is below 1,500 ug/g. Thorough mixing is required, and pilot testing of various techniques may be needed to ensure that thorough mixing does occur.
 - 7. Paving: The covering of highly contaminated soil with high quality concrete or asphalt. Paving is common in high traffic areas but not appropriate in play areas. The need for uncontaminated replacement soil is eliminated as is waste disposal costs. Paving often turns out to be the most economical recourse, despite its aesthetic disadvantages.

3.02 LEAD-BASED PAINT HAZARD CLEARANCE TESTING

- A. Where lead-based paint hazard control or reduction work has been performed by the General Contractor, the General Contractor will contact a certified third party Clearance Technician for clearance testing.
- B. The Clearance Technician will conduct a visual assessment of completed work, take dust samples, have dust samples analyzed, and prepare a Clearance Report.
- C. If sample results fail, Minnesota rules 4761.2670 subpart 2 and subpart 3 must be repeated. If test results of samples fail to meet clearance standards, surfaces must be retreated or recleaned at no additional cost to the Owner until clearance standard is met.
- D. When the Clearance Report indicates that clearance standards have been met, and all other requirements of this section have been met, the Construction Manager and Owner will approve the final pay application.

END OF SECTION

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide three pier footings for new Front Porch and four post footings for new Rear Deck.
- B. Provide foundation wall footing at rebuilt area of Front Entry.
- C. Provide leveling of basement floor slab to eliminate irregular raised edge at former water heater locations.
- D. Provide Garage floor slab with thickened edges and curb walls.

1.02 SECTION INCLUDES

- A. Excavation for concrete footings.
- B. Concrete footings.
- C. Floors and slabs on grade.
- D. Floor repair.

1.03 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- C. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2010.
- D. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.

1.04 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI 347 to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
- C. Footings
 - 1. 10" thick x 20" wide, continuous.
 - a. Enlarged Front Entry addition.
 - 2. 16" dia. x depth to match existing foundation.
 - a. Porch and deck piers.
 - 3. 8" dia. x 5'-0" deep piers.
 - a. Stair pad landing footings.

2.02 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420).
 - 1. Footings
 - a. Two #5 bar, continuous at garage footings.
 - b. Three #5 bar, continuous at entry addition wall footings.
 - c. Two #5 bar, verticals at porch and deck piers.
 - d. Two #4 bar, vertical at stair pad landing footings.
 - 2. Type: Deformed billet-steel bars.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal Portland type.
 - 1. Acquire all cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C33.
 - 1. Acquire all aggregates for entire project from same source.
- C. Fly Ash: ASTM C618, Class C.
- D. Water: Clean and not detrimental to concrete.

2.04 CHEMICAL ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- D. Water Reducing Admixture: ASTM C494/C494M Type A.

2.05 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
 - 1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
 - 2. Products:
 - a. Stego Industries, LLC; Stego Wrap Vapor Barrier 15-mil (Class A): www.stegoindustries.com.

2.06 CURING MATERIALS

- A. Moisture-Retaining Sheet: ASTM C171.
 - 1. Curing paper, regular.
 - 2. Polyethylene film, clear, minimum nominal thickness of 0.0040 in. (0.10 mm).
 - 3. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd, 40 inches wide (305 grams per sq. meter).

2.07 CONCRETE MIX DESIGN

- A. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
- B. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 psi (27.6 MPa).
 - 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight, typical.
 - a. 20 percent at slabs on grade.
 - 3. Water-Cement Ratio: Maximum 50 percent by weight.
 - 4. Total Air Content: 1.5 percent, determined in accordance with ASTM C173/C173M.
 - 5. Maximum Slump: 4 inches (100 mm).
 - 6. Maximum Aggregate Size: 3/4 inch (19 mm), typical.

2.08 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 PREPARATION

- A. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
 - 1. Use latex bonding agent only for non-load-bearing applications.
- B. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches (150 mm). Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
 - 1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as shown on the drawings. Do not use sand.

3.02 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify Construction Manager not less than 24 hours prior to commencement of placement operations.

3.03 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. Maximum Variation of Surface Flatness:
 - 1. Garage slab: Slope to drain at overhead door opening, 1/4" per foot.
- B. Correct the slab surface if tolerances are less than specified.
- C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.04 CONCRETE FINISHING

- A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. "Steel trowel" as described in ACI 301.1R; Basement Floor.

3.05 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Surfaces Not in Contact with Forms:
 - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - 2. Final Curing: Begin after initial curing but before surface is dry.

3.06 DEFECTIVE CONCRETE

- A. Repair or replacement of defective concrete will be determined by the Construction Manager. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- B. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Construction Manager for each individual area.

END OF SECTION

SECTION 04 0100
MAINTENANCE OF MASONRY

PART 1 GENERAL

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1.01 LOCATIONS

- A. Patch and re-parge exterior of exposed foundation wall.
- B. Brush down interior face of foundation walls in full-height portion of the Basement..

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 PREPARATION

- A. Protect surrounding elements from damage due to restoration procedures.
- B. Remove all loose parging material from exposed surfaces of exterior side of foundation wall.
- C. Clean areas to receive new parging with low pressure water spray.

3.02 BASEMENT WALL CLEANING

- A. A. Brush down and vacuum interior side of stone foundation walls, full height, working from top to bottom. Use a medium-stiff nylon or fiber brush to loosen surface particles. Vacuum entire wall surface after brushing, with a brush attachment on a HEPA filtered vacuum. Vacuum debris that accumulates on floor. Notify Architect if there are areas of the stone foundation walls where stone or mortar is missing over 1/3 of its original depth after the cleaning.

3.03 PARGING

- A. Apply parging mortar to surface of clean stone wall in a uniform minimum thickness of 3/8". Protect surrounding surfaces from excess mortar. Where existing wall surface is too smooth for good adherence of parging mortar, apply metal lath to full extent of wall surface to be covered prior to applying parging.

3.04 CLEANING

- A. Remove excess mortar, smears, and droppings as work proceeds and upon completion.

END OF SECTION

SECTION 04 2000
UNIT MASONRY

PART 1 GENERAL

1.01 LOCATIONS

- A. Provide concrete masonry foundation wall at rebuilt area of Front Entry.

1.02 SECTION INCLUDES

- A. Concrete Block.
- B. Mortar and Grout.
- C. Reinforcement and Anchorage.
- D. Accessories.

1.03 REFERENCE STANDARDS

- A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International; 2011.
- B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2008.
- C. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.
- D. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2012.
- E. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a.
- F. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.
- G. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2011.
- H. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- I. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.
- J. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- K. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2012.
- L. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- M. ASTM C476 - Standard Specification for Grout for Masonry; 2010.
- N. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2011.
- O. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2008) .
- P. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2011a.
- Q. ASTM C1357 - Standard Test Methods for Evaluating Masonry Bond Strength; 2009.

PART 2 PRODUCTS

2.01 MASONRY UNITS GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

2.02 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 x 8 inches (400 x 200 mm) and nominal depths as indicated on the drawings for specific locations.

2. Load-Bearing & Non-Loadbearing Units: ASTM C 90, normal weight.
 - a. Standard block units Both hollow and solid .
 - 1) Exposed faces: Manufacturer's standard color and texture.
 - b. Minimum Average Net Area Compressive Strength: 2000 psi.

2.03 MORTAR AND GROUT MATERIALS

- A. Masonry Cement: ASTM C91, Type as noted.
 1. Colored mortar: Premixed cement as required to match Construction Manager's color sample.
- B. Portland Cement: ASTM C150, Type I; color as required to produce approved color sample.
 1. Not more than 0.60 percent alkali.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Mortar Aggregate: ASTM C144.
 1. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
- E. Grout Aggregate: ASTM C404.
- F. Water: Clean and potable.

2.04 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420) deformed billet bars; uncoated.
 1. Entry addition walls:
 - a. Provide one vertical #5 bar at 32" on center and at corners, tied into footing dowels to match. Grout solid.
- B. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- C. Single Wythe Joint Reinforcement: Truss or ladder type; ASTM A82/A82M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M, Class B; 0.1483 inch (3.8 mm) side rods with 0.1483 inch (3.8 mm) cross rods; width as required to provide not more than 1 inch (25 mm) and not less than 1/2 inch (13 mm) of mortar coverage on each exposure.
- D. Anchor Bolts: Headed steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.

2.05 ACCESSORIES

- A. Bond Breaker Strips: ASTM D 226, Type I ("No.15") asphalt felt.

2.06 MORTAR AND GROUT MIXES

- A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
 1. Masonry below grade and in contact with earth: Type S.
 2. Exterior, loadbearing masonry: Type M or Type S.
- B. Grout: ASTM C476. Consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches (50 mm) or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches (50 mm).
- C. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

- A. Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

3.04 INSTALLATION - GENERAL

- A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.

3.05 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
 - 1. Bond: Running.
 - 2. Coursing: One unit and one mortar joint to equal 8 inches (200 mm).
 - 3. Mortar Joints: Concave.

3.06 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units as follows.
 - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 - 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
- F. Interlock intersections and external corners, except for units laid in stack bond.
- G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- I. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.
- J. Isolate masonry partitions from vertical structural framing members with a control joint .
- K. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.07 REINFORCEMENT AND ANCHORAGE - GENERAL

- A. Fasten anchors through sheathing to wall framing or to masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
- B. Embed tie sections in masonry joints. Provide not less than 2 inches (50 mm) of air space between back of masonry veneer and face of sheathing.

- C. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
- D. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches (400 mm) on center.
- E. Place masonry joint reinforcement in first horizontal joints above and below openings. Extend minimum 16 inches (400 mm) each side of opening.
- F. Place continuous joint reinforcement in first joint below top of walls.
- G. Lap joint reinforcement ends minimum 6 inches (150 mm).

3.08 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHE MASONRY

- A. Install horizontal joint reinforcement 16 inches (400 mm) on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches (400 mm) each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches (150 mm).

3.09 GROUTED COMPONENTS

- A. Reinforce members per the structural drawings.
- B. Lap splices minimum 24 bar diameters, minimum.
- C. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch (13 mm) of dimensioned position.
- D. Place and consolidate grout fill without displacing reinforcing.
- E. At bearing locations, fill masonry cores with grout for a minimum 8 inches (____ mm) either side of opening.
- F. Fill cores in hollow CMUs with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.10 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).
 - 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
 - 3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.
- B. Lines and Levels:
 - 1. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
 - 2. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
- C. Joints:
 - 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
 - 2. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).
 - 3. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm).

3.11 CLEANING

- A. Final Cleaning Brick and Concrete Masonry: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Protect surfaces from contact with cleaner.
 2. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 3. Clean un-faced masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
- B. Remove excess mortar and mortar droppings.
 - C. Replace defective mortar. Match adjacent work.
 - D. Clean soiled surfaces with cleaning solution.
 - E. Use non-metallic tools in cleaning operations.

3.12 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

3.13 MASONRY WASTE DISPOSAL

- A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
 1. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.
- B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION

SECTION 04 2300
GLASS UNIT MASONRY

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide vented glass block panels at all Basement window openings.

1.02 SECTION INCLUDES

- A. Glass block panels with vent units.
- B. Perimeter treatment.

PART 2 PRODUCTS

2.01 GLASS UNITS

- A. Hollow Glass Units: Permanently seal hollow unit by heat fusing joint; with joint key to assist mortar bond.
 - 1. Provide the combination of unit sizes required to fit existing masonry opening size using whole units.
 - 2. Color: Clear glass.
 - 3. Pattern and Design: Light diffusive wavy design on inner faces.

2.02 ACCESSORIES

- A. Vent unit: Heavy duty, vinyl frame with operable insulated glass sash and full insect screen. Nominal 8"h. x 16"w. x same depth as glass block units.
- B. Sealant and Backer Rod: Silicone sealant to match mortar color, foam backer rod.
- C. Perimeter Channel: Extruded aluminum channel profile, 4-3/4 inch (120 mm) by 1-1/4 inch (32 mm) by 1/8 inch (3 mm) size, one piece per length installed, uncoated finish.

2.03 MORTAR AND POINTING MATERIAL

- A. Mortar: Type S with waterproofing admixture.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing wood windows and frames are completely removed and openings are ready to receive work.

3.02 INSTALLATION

- A. Shop fabricate glass block panels with perimeter channel, using all full block units to fit existing opening sizes. Set vent unit in center of each panel. Mortar joints to be uniform width and tooled concave.
- B. Install panel in existing opening with a full bed of mortar between masonry opening and sill and jams. Provide foam backer rod and silicone sealant both interior and exteriors at head. Tool exposed joints slightly concave when mortar is thumbprint hard.

3.03 CLEANING

- A. Clean glass block/vent panel and surrounding surfaces upon completion, using materials and technique that will not scratch or deface units.

END OF SECTION

SECTION 05 7300
DECORATIVE METAL RAILINGS

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide shop-painted metal handrails at both sides of Front Porch steps.

1.02 SECTION INCLUDES

- A. Free-standing and wall-mounted railings at steps.

1.03 REFERENCE STANDARDS

- A. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2000 (Reapproved 2006).

1.04 WARRANTY

- A. Warranty: Manufacturer's standard one year warranty against defects in materials, fabrication, finishes, and installation commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 RAILING SYSTEMS

- A. Railings - General: Factory- or shop-fabricated in design indicated, to suit specific project conditions, and for proper connection to building structure, and in largest practical sizes for delivery to site.
1. Design Criteria: Design and fabricate railings and anchorages to resist the following loads without failure, damage, or permanent set; loads do not need to be applied simultaneously.
 - a. Lateral Force: 75 lb (333 N) minimum, at any point, when tested in accordance with ASTM E935.
 - b. Distributed Load: 50 pounds per foot (0.73 kN per m) minimum, applied in any direction at the top of the handrail, when tested in accordance with ASTM E935.
 - c. Concentrated Loads on Intermediate Rails: 50 pounds per square ft (0.22 per sq m), minimum.
 - d. Concentrated Load: 200 pounds (888 N) minimum, applied in any direction at any point along the handrail system, when tested in accordance with ASTM E935.
 2. Assembly: Join lengths, seal open ends, and conceal exposed mounting bolts and nuts using slip-on non-weld mechanical fittings, flanges, escutcheons, and wall brackets.
 3. Joints: Tightly fitted and secured, machined smooth with hairline seams.
 4. Field Connections: Provide sleeves to accommodate site assembly and installation.
 5. Welded and Brazed Joints: Make exposed joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.
 - a. Ease exposed edges to small uniform radius.
 - b. Welded Joints:
 - 1) Carbon Steel: Perform welding in accordance with AWS D 1.1/D1.1M.
 - 2) Stainless Steel: Perform welding in accordance with AWS D 1.6.
- B. Grout / anchoring cement: Premixed, nonshrink, nonmetallic grout.
- C. Steel and Iron: At round pipe railings: 1-1/2" outside diameter pipe. Top rails to be 2'-10" above stair nosing and extend 12" at top and bottom of stairs where possible.
1. Finishes: Prepare raw material by "Brush-Off Blast Cleaning". Rust inhibiting alkyd primer (1 coat and flat black finish (2 coats), applied in ship to all exposed surfaces of metal, even if not normally visible.

2.02 ACCESSORIES

- A. Anchors and Fasteners: Provide anchors and other materials as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
 - 1. For anchorage to concrete, provide inserts to be cast into concrete for bolting anchors.
 - 2. For anchorage to wood, provide backing plates for bolting anchors.
 - 3. Exposed Fasteners: No exposed bolts or screws.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion or defects and with tight joints, except where necessary for expansion.
- B. Anchor posts in concrete by inserting into formed or core-drilled holes and grout space between post and concrete.
- C. Anchor handrail ends to concrete and masonry with round flanges connected to rail ends and anchored to wall construction with drilled in expansion anchors.
- D. Anchor securely to wood structure using plates and bolts to meet design criteria.
- E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.
- F. Isolate dissimilar materials with bituminous coating, bushings, grommets or washers to prevent electrolytic corrosion.

END OF SECTION

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

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1.01 LOCATIONS

- A. Construct Garage using pre-purchased garage package. Install swinging door and sliding window furnished with the garage package.
- B. Provide framing at enlarged and rebuilt Front Entry.
- C. Provide all new Front Porch framing at floor, columns and roof as indicated on the Drawings.
- D. Provide decking at Front Porch.
- E. Provide wood steps at Front Porch.
- F. Provide wood deck, railing and steps at Rear Deck.
- G. Provide wood guardrail and handrail at Basement stairway.
- H. Provide solid wood risers at Basement stairway, maintaining existing tread depth and nosing profile.
- I. Provide precast concrete post bases at wood columns in Basement.
- J. Replace three steel columns in Basement.
- K. Repair all first floor joists and areas of rim joist that are water damaged or structurally inadequate due to cutouts.
- L. Review exposed first floor framing in Basement and reinforce all floor joists that do not meet code requirements for span rating.
- M. Provide removable plywood access panel at crawl space opening.
- N. Cut and frame all new window openings as indicated on the floor plan Drawings.
- O. Infill openings at first floor, second floor and attic floor where chimney was removed with floor/ceiling assembly to match adjacent assembly.
- P. Provide roof framing infill opening where chimney was removed. Sheathing included in asphalt roofing section.
- Q. Infill abandoned window and door openings in exterior wall with wall construction to match adjacent assembly.
- R. Infill abandoned interior door openings with wall construction to match adjacent assembly.
- S. Infill floor structure at second floor where rear stairway was removed.
- T. Provide subfloor repair in Bathrooms in preparation of new underlayment for tile flooring throughout the reconfigured Bathrooms.
- U. Provide blocking in Bathroom walls for fixtures and accessories.

1.02 SECTION INCLUDES

- A. Structural dimension lumber framing.
- B. Non-structural dimension lumber framing.
- C. Rough opening framing for doors, windows, and roof openings.
- D. Sheathing.
- E. Subflooring.
- F. Underlayment.
- G. Miscellaneous framing and sheathing.
- H. Concealed wood blocking, nailers, and supports.
- I. Miscellaneous wood nailers, furring, and grounds.
- J. Precast concrete post bases for basement wood columns.

- K. Adjustable height steel columns for basement.

1.03 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS

- A. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; American Forest and Paper Association; 2001.
- B. PS 1 - Structural Plywood; 2007.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Douglas Fir-Larch, unless otherwise indicated.
 - 2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
 - 4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.
- B. Lumber fabricated from old growth timber is not permitted.
- C. Provide wood harvested within a 500 mile (805 km) radius of the project site; see Section 01 6000 for requirements for locally-sourced products.
- D. Lumber salvaged from deconstruction or demolition of existing buildings or structures is permitted in lieu of sustainably harvested lumber provided it is clean, denailed, and free of paint and finish materials, and other contamination; identify source; see Section 01 6000 for requirements for reused products.
- E. Lumber fabricated from recovered timber (abandoned in transit) is permitted in lieu of sustainably harvested lumber, unless otherwise noted, provided it meets the specified requirements for new lumber and is free of contamination; identify source.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Stud Framing (2 by 2 through 2 by 6 (50 by 50 mm through 50 by 150 mm)):
 - 1. Grade: No. 2.
- D. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16 (50 by 150 mm through 100 by 400 mm)):
- E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

- A. Subfloor/Underlayment Combination: Plywood, APA PRP-108, Rated Sturd-I-Floor.
 - 1. Exposure Class: Exterior.
 - 2. Span Rating: 24 inches (610 mm).
 - 3. Thickness: 3/4 inches (19 mm), nominal.
 - 4. Edges: Tongue and groove.
- B. Roof Sheathing: APA PRP-108, Structural I Rated Sheathing, Exterior Exposure Class, and as follows:

1. Span Rating: 24/0 (610/0).
 2. Thickness: 1/2 inch (13 mm), nominal.
- C. Wall Sheathing: APA PRP-108, Structural I Rated Sheathing, Exterior Exposure Class, and as follows:
1. Span Rating: 24/0 (610/0).
- D. Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I.

2.04 ACCESSORIES

- A. Fasteners and Anchors:
1. Metal and Finish: Stainless steel for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
- B. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions. Provide _____ manufactured by _____.
1. For contact with preservative treated wood in exposed locations, provide minimum G185 (Z550) galvanizing per ASTM A653/A653M.
- C. Subfloor Glue: Waterproof, water base, air cure type, cartridge dispensed.
- D. Water-Resistive Barrier: No. 15 asphalt felt.
- E. Building Paper: Water-resistant Kraft paper.
- F. Precast Concrete Column Bases: Precast concrete plinth blocks with flat top and sloped sides, intended for use as a base under existing wood posts to keep wood out of contact with concrete floor and to allow deteriorated wood at bottom of old posts to be removed.
- G. Adjustable Height Steel Columns: ASTM 500 Grade B cold formed steel pipe adjustable height column with top and base plate, with red iron oxide primer. Column size to be determined by Contractor based on overall height and structural load conditions.

2.05 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.02 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices unless otherwise specifically detailed.

- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.
- E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches (38 mm) of bearing at each end.
- F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- G. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.03 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.04 INSTALLATION OF CONSTRUCTION PANELS

- A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.
- B. Underlayment: Secure to subflooring with nails and glue.
 - 1. Place building paper between floor underlayment and subflooring.
- C. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
 - 1. Nail panels to framing; staples are not permitted.
- D. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.

3.05 TOLERANCES

- A. Framing Members: 1/4 inch (6 mm) from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet (2 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.

3.06 CONCRETE POST BASES

- A. Provide temporary shoring and bracing and sawcut deteriorated material at bottom of wood support posts in Basement to be removed to the height required for placement of plinth block. Set new precast concrete plinth block on sound concrete slab, directly under post. Provide wood shims to maintain post at proper bearing height.

3.07 STEEL COLUMNS

- A. Provide temporary shoring and bracing and remove existing steel columns in Basement. Set new steel columns on sound concrete slab, directly under beam. Provide water impermeable shims to produce full bearing at base plate and top plate. Adjust height of column to maintain existing bearing height of beam supported by column..

END OF SECTION

SECTION 06 2000
FINISH CARPENTRY

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide finish trim at Front Porch including columns, beams, floor edge, railing, fascia and beadboard soffit as indicated on the Drawings.
- B. Provide wood base trim and base shoe throughout the house except in Bathrooms.
- C. Provide wood window and door casing trim throughout the house.
- D. Provide handrail on stairway to second floor.
- E. Provide 36" high railing with newel post and balusters at top of stairway to second floor.

1.02 SECTION INCLUDES

- A. Finish carpentry items.
- B. Wood casings and moldings.
- C. Beadboard soffit panels at all new Front Porch.
- D. Wood railing and trim at all new Front Porch.
- E. Hardware and attachment accessories.

1.03 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

1.05 RELATED SECTIONS

- A. See Section 09 9000 Painting and Coating, for trim finish and color.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect work from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Premium Grade.
- B. Exterior Woodwork Items:
 - 1. Finish trim at Front Porch columns, beams, floor edge, railing, fascia:
 - a. Smooth 4 sides clear cedar..
- C. Beadboard Soffit: Plywood panels with beadboard finish on one side or 1v4 t&g beadboard paneling.
- D. Interior Woodwork Items:
 - 1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear maple; for stain finish.
 - a. Door and Window Casing: Ferche Millwork profile F1574 9/16" x 3-1/2" with F1915 back band at outer perimeter of casing.
 - b. Base Trim: Ferche Millwork profile F
 - c. Base Shoe: Ferche Millwork profile
 - 2. Interior Handrails: Clear fir; prepare for stained finish.
 - 3. Newel Post and railing at Second Floor Stairway: Clear maple for transparent finish. Newel post with cap, top rail at 36" high, plain square ballusters at 4" on center spacing, bottom rail.

2.02 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.

- B. Provide sustainably harvested wood, certified or labeled as specified in Section 01 6000.
- C. Provide wood harvested within a 500 mile (805 km) radius of the project site.

2.03 LUMBER MATERIALS

- A. Interior Hardwood Lumber at trim: Maple species, smoothsawn, maximum moisture content of 6 percent ; with vertical grain , of quality suitable for transparent finish.

2.04 FASTENINGS

- A. Exterior fasteners: Hot-dipped zinc coating or stainless steel.

2.05 HARDWARE

- A. Handrail brackets: Heavy duty cast metal handrail brackets.

2.06 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.
- C. Use finish nails of sufficient length to penetrate framing 1".
- D. Mitre all lap joints, and break all lap joints over framing.
- E. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (1 mm). Do not use additional overlay trim to conceal larger gaps.
- F. Standing and running trim: Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Cope at returns and miter at corners.

3.02 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch (1.5 mm).
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.7 mm).

END OF SECTION

SECTION 07 2119
FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide 3" minimum spray foam insulation in Bathroom 1 and Bathroom 2 exterior and interior stud wall cavities and ceiling joist cavities. Apply from interior side of walls and ceilings.
- B. Provide minimum R-19 spray foam insulation at interior side of rim joist, band joist and walls at existing Crawl Space in Basement and at new crawl space under rebuilt Front Entry addition.
- C. Provide spray-on thermal barrier coating at all foamed in place insulation not covered by gypsum board.

1.02 SECTION INCLUDES

- A. Foamed-in-place insulation.
 - 1. In exterior and interior framed walls and ceilings.
 - 2. At rim joist, band joist and walls in crawl spaces.

1.03 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS

- A. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2006.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Foamed-In-Place Insulation: Medium-density, rigid or semi-rigid, closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
 - 1. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
 - 2. Closed Cell Content: At least 90 percent.

2.02 ACCESSORIES

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify work within construction spaces or crevices is complete prior to insulation application.
- B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation or overcoat adhesion.

3.02 PREPARATION

- A. Mask and protect adjacent surfaces from over spray or dusting.
- B. Apply primer in accordance with manufacturer's instructions.

3.03 APPLICATION

- A. Apply insulation in accordance with manufacturer's instructions.
- B. Apply insulation by spray method, to a uniform monolithic density without voids.
- C. At Bathrooms, apply to a minimum cured thickness of two inch (____ mm).
- D. At crawl spaces, apply to achieve a thermal resistance R value of 19 (RSI value of ____).
- E. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.
- F. Trim excess away for applied trim or remove as required for continuous sealant bead.

END OF SECTION

SECTION 07 2126
BLOWN INSULATION

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide dense-pack cellulose insulation in all exterior stud wall cavities, except Bathroom exterior walls. Determine that cavities are free of hazards and can support dense-packing pressures and locate drilling hazards. Completely fill each cavity to a consistent density of 3.5 lbs/cu.ft.
- B. Install air chutes at all Attic rafter spaces.
- C. Provide blown cellulose insulation in Attic after all bypasses are sealed. Blow insulation to depth indicated on manufacturer's coverage chart consistently and evenly to attain R-50.
- D. Provide blown cellulose insulation using the Dense Pack Method at sloped ceiling areas of second floor, to a minimum density of 3.5 lbs/cuft.

1.02 SECTION INCLUDES

- A. Exterior Walls: Loose insulation pneumatically placed and poured into wall spaces through access holes.
- B. Attic: Loose insulation pneumatically placed and poured into joist spaces through access holes.

1.03 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS

- A. ASTM C739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation; 2011.
- B. ASTM C1015 - Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation; 2006 (Reapproved 2011)e1.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Loose Fill Insulation: ASTM C739, cellulose fiber type, nodulated for pour and bulk for pneumatic placement.
 - 1. R-Value: Attic R-50
- B. Dense Pack Insulation: Fill Insulation: ASTM C739, cellulose fiber type, nodulated for pour and bulk for pneumatic placement.
 - 1. R-Value: 19 if possible
 - 2. Density: 3.5 Lbs. per Cubic Foot for the entire cavity
- C. Ventilation Baffles: Formed plastic.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install insulation and ventilation baffle in accordance with ASTM C1015 and manufacturer's instructions.
- B. Drill 2 inch (50 mm) diameter insulation access ports in exterior sheathing and fascia boards prior to residing work to permit equipment access.
- C. Place insulation pneumatically to completely fill stud, joist, and rafter spaces .
- D. Pour insulation to completely fill stud, joist, and rafter spaces to a density of 3.5 lbs per cubic foot per cavity.
- E. Place insulation against attic vent baffles. Do not impede natural attic ventilation to soffit.
- F. Completely fill intended spaces. Leave no gaps or voids.
- G. Carefully seal all drilled holes with wood or foam plugs and patch all holes to match surrounding materials if the surface is exposed.

- H. In balloon framed houses insures that blown cellulose is blocked from entering floor cavities such as second floor flooring.
- I. ATTIC: Total r-value: R-50 according to NEC requirements.
- J. WALLS AND SLOPED CEILINGS AT SECOND FLOOR: Where walls are unopened, externally dense pack insulation to R-19 if possible or 3.5 lbs.per cubic foot per cavity.
- K. Repair and reseal insulation access ports. Refinish to match disturbed work.

3.02 CLEANING

- A. Remove loose insulation residue.

END OF SECTION

SECTION 07 2500
WEATHER BARRIERS

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide complete weather barrier system at house exterior. System to include approved fasteners, tape, and full coordination with openings and flashing as required by weather barrier manufacturer.
- B. Provide complete weather barrier system at garage exterior. System to include approved fasteners, tape, and full coordination with openings and flashing as required by weather barrier manufacturer.

1.02 SECTION INCLUDES

- A. Water-Resistive Barrier: Under exterior wall cladding, over sheathing or other substrate; not air tight or vapor retardant.
- B. Vapor Retarders: Materials to make exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls water vapor-resistant and air tight.

1.03 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-In-Place Concrete: Vapor retarder under concrete slabs on grade.

1.04 REFERENCE STANDARDS

1.05 UNIT PRICES

- A. Tyvek material has been pre-purchased by the HRA for this project. Delivery of all material to the job site is included in pre-purchase. Contractor is responsible for contacting specified vendor to arrange for and take delivery. Provide a bid price for labor and additional materials required to perform work to code.
 - 1. Vendor: Lampert Siding
 - 2. Pre-purchased materials:
 - a. Tyvek Housewrap

1.06 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

PART 2 PRODUCTS

2.01 WEATHER BARRIER ASSEMBLIES

- A. Weather Barrier Membrane: Spunbonded polyolefin, non-woven, non-perforated, wether barrier
 - 1. Manufacturer: DuPont Tyvek Drain Wrap.
- B. Seam Tape: DuPont Tyvek.
- C. Flashing: DuPont Tyvek.
- D. Fasteners: DuPont Tyvek.
- E. Interior Vapor Retarder: 6 Mil heavy plastic (polyethylene) sheeting
 - 1. On inside face of masonry and concrete walls use vapor retarder sheet, self-adhesive type,.
 - a. Install to cover ground in crawl space and 6" up foundation walls
 - b. Overlap seams by 2' and secure with Tyvek tape.

2.02 ACCESSORIES

- A. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970, except slip resistance requirement is waived if not installed on a roof.
 - 1. Composition: Modified bituminous sheet laminated to polyethylene sheet.
 - 2. Thickness: 40 mil (0.040 inch) (1.02 mm), nominal.
 - 3. Products:

- a. Dupont Tyvek Flex Wrap at sills.
- b. Dupon Tyvek Straight Flash at jambs and to secure metal flashing at heads..

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

3.03 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- C. Install weather barrier over exterior face of exterior wall substrate in accordance with manufacturers recommendations.
- D. Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturers recommended fasteners, spaced 12-18 inches vertically on center along stud line, and 24 inches on center, maximum horizontally.
- E. Flash openings using Dupont Tyvek installation instructions and accessories listed above.

3.04 FIELD QUALITY CONTROL

- A. Do not cover installed weather barriers until required inspections have been completed.

3.05 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

SECTION 07 2700
AIR BARRIER SYSTEM (SEALING OF BYPASSES)

PART 1 GENERAL

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1.01 LOCATIONS

- A. Seal all Attic bypasses.
- B. Air seal and insulate Attic access panel with R-19 insulation panel.
- C. Provide insulation at rim joist in Basement as follows: Seal cracks and holes in rim joist. Caulk or foam 3 inches of rigid insulation in place.
- D. Provide vapor barrier over earth floor of existing and new crawl space in Basement and 4" layer of clean gravel over the vapor barrier.

1.02 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in Minnesota.

PART 2 PRODUCTS

2.01 ADHESIVES AND SEALANTS

- A. VOC content not to exceed the following [g/L; less water and less exempt compounds]
 - 1. Multipurpose construction adhesives: 70 g/L

2.02 VAPOR RETARDER

- A. Interior Vapor Retarder: 6 Mil heavy plastic (polyethylene) sheeting.
- B. Gravel: Clean rounded gravel, 3/4" maximum.

PART 3 EXECUTION

3.01 ATTIC BYPASS SEALING

- A. Contractor shall seal all attic bypasses. Bypasses shall be defined as any break in the envelope of a house between a heated living space and an unheated area or exterior. Bypass locations include, but are not limited to, the following areas: chimneys, soil stacks, end walls, dropped ceilings, open plumbing walls, beneath kneewalls and around duct work, electrical work and attic access points. Bypasses shall be sealed in such a manner that the movement of air through the bypass is essentially stopped. "Essentially stopped" means that air leakage will not be detected by an infrared scan when the house is pressurized to 30 Pascals. Materials to be used for sealing bypasses depend on the size and location of the bypass and meet code requirements. These materials include high quality caulks (20-year life span), polyethylene rod stock, foam, sheetrock, sheet metal, extruded polystyrene and densely packed insulation.

3.02 RIM JOIST SEALING

- A. Where accessible in basement, seal cracks and holes in first floor rim joist before insulating. Caulk or foam 3 inches of rigid insulation in place.

3.03 VAPOR RETARDER

- A. Evenly grade exposed earth in crawl space area after removal of excess material under section 024100 Demolition. Apply vapor retarder over entire surface of ground, lapping joints a minimum of 8" and turning edges up at the perimeter wall a minimum of 8". Apply an even layer of gravel over the entire surface of the vapor retarder, 4" deep.
- B. On inside face of studs of exterior walls, under cladding, use mechanically fastened vapor retarder sheet.

END OF SECTION

SECTION 07 3113
ASPHALT SHINGLES

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide sloped shingle roofing for new Front Porch.
- B. Provide new roof sheathing where chimney is removed at house.
- C. Provide continuous ridge vent and provide ridge vent manufacturer's recommended opening in roof sheathing at ridge line, cutting existing sheathing if necessary, without damage to rafters.
- D. Install pre-purchased roofing materials at house and Garage, including roofing felt, ice & water shield and asphalt shingles.

1.02 SECTION INCLUDES

- A. Asphalt shingle roofing.
- B. Flexible sheet membranes for eave protection, underlayment, and valley protection.
- C. Associated metal flashings and accessories.

1.03 RELATED REQUIREMENTS

- A. Section 07 7123 - Manufactured Gutters and Downspouts.

1.04 REFERENCE STANDARDS

- A. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2011.
- C. ASTM D3462 - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules; 2010a.
- D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012)e1.
- E. NRCA MS104 - The NRCA Steep Roofing Manual; National Roofing Contractors Association; 2001, Fifth Edition, with interim updates.

1.05 PRE-PURCHASED MATERIALS

- A. Roofing material has been purchased by the HRA for this project FOR THE HOUSE AND GARAGE. Delivery of all material to the job site is included in pre-purchase. Contractor is responsible for contacting specified vendor to arrange for and take delivery. Provide a bid price for labor and additional materials required to perform work to code.
 - 1. Vendor: Lampert Roofing
 - 2. Pre-purchased materials:
 - a. GAF Elk Timberline 30 year HD Shingles
 - b. Timetex Ice and Water Shield 15 lb. felt.
- B. Cost of roofing materials for the new Front Porch is not included in pre-purchase and should be included in the Contractor's bid.
- C. Roof sheathing replacement. Match existing material, thickness, and installation.
 - 1. Unit of measurement: Square foot.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with the recommendations of NRCA Steep Roofing Manual.

PART 2 PRODUCTS

2.01 SHINGLES

- A. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462; Class A fire resistance.

1. Self-sealing type.
2. Manufacturer: GAF ELK, Timberline 30 Year HD shingles
3. Style: Architectural Shingle.

2.02 SHEET MATERIALS

- A. Eave Protection Membrane: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970; 40 mil (1 mm) total thickness; with strippable treated release paper and polyethylene sheet top surface.
 1. Manufacturers:
 - a. Grace Construction Products ; Product Ice & water shield.
- B. Underlayment: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D226 , Type I ("No.15").

2.03 ACCESSORIES

- A. Nails: Standard round wire shingle type, of hot dipped zinc coated steel, minimum 3/8 inch (9.5 mm) head diameter and 0.105 inch (2.67 mm) shank diameter, 1-1/4 inch (31 mm) long.
- B. Plastic Cement: ASTM D4586, asphalt roof cement.
- C. Roof Vents at House and Garage: Pre-finished aluminum hoods with screens in color to match shingle color. Size and location of roof vents to be determined by contractor based on existing conditions, new vented soffit area and code requirements.
- D. Ridge Vents at House: Plastic, formed with vent openings that do not permit direct water or weather entry; flanged to receive shingles ; Cobra Rigidvent 2 manufactured by GAF Materials Corporation.

2.04 METAL FLASHINGS

- A. Metal Flashings: Provide sheet metal gable edge, open valley flashing, chimney flashing, dormer flashing, and eave drip edge.
 1. Hem exposed edges of flashings minimum 1/4 inch (6 mm) on underside.
- B. Sheet Metal: Prefinished aluminum, 0.016 inch (0.4 mm) thick; PVC coating, match shingle color.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.

3.02 PREPARATION

- A. Tear Off: Remove all old roofing materials down to roof sheathing. Provide ground surface protection with drop cloths to catch roofing debris and nails. Remove damaged sheathing and replace with new sheathing to match existing roof sheathing thickness, if approved by Construction Manager. Use nailing clips that allow air space between panel edges. Asphalt shingles shall be installed on sheathing with gaps no more than 1/2" wide. If existing sheathing has gaps over 1/2" wide over more than 10% of the surface area, the roof shall be re-sheathed.
- B. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.
- C. Broom clean deck surfaces before installing underlayment or eave protection.

3.03 INSTALLATION - EAVE PROTECTION MEMBRANE

- A. Install eave protection membrane from eave edge to minimum 4 ft (1 200 mm) up-slope beyond interior face of exterior wall.

3.04 INSTALLATION - UNDERLAYMENT

- A. At Roof Slopes Greater Than 4:12 (1:3) : Install underlayment perpendicular to slope of roof, with ends and edges weather lapped minimum 4 inches (100 mm). Stagger end laps of each consecutive layer. Nail in place. Weather lap minimum 4 inches (100 mm) over eave protection.

- B. Items projecting through or mounted on roof: Weather lap and seal watertight with plastic cement.

3.05 INSTALLATION - VALLEY PROTECTION

- A. Install eave protection membrane 18" each side of valleys. Lap ends a minimum of 6 inches in the direction to shed water.

3.06 INSTALLATION - METAL FLASHING AND ACCESSORIES

- A. Install flashings in accordance with NRCA requirements.
- B. Install roof vent and ridge vent in accordance with manufacturer's instructions.
- C. Weather lap joints minimum 2 inches (50 mm) and seal weather tight with plastic cement.
- D. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.
- E. Replace all plumbing and vent stacks with new units.
- F. Determine roof venting requirements and provide additional roof vents if necessary to meet current code requirements.

3.07 INSTALLATION - SHINGLES

- A. Install shingles in accordance with manufacturer's instructions.
 - 1. Fasten individual shingles using 2 nails per shingle, or as required by code, whichever is greater.
 - 2. Fasten strip shingles using 4 nails per strip, or as required by code, whichever is greater.
- B. Project first course of shingles 3/4 inch (19 mm) beyond fascia boards.
- C. Extend shingles 1/2 inch (13 mm) beyond face of gable edge fascia boards.
- D. Coordinate installation of roof mounted components or work projecting through roof with weather tight placement of counterflashings.
- E. Complete installation to provide weather tight service.

3.08 CLEANUP

- A. Rake and sweep ground surface to pick up all debris related to roofing work and nails that were not picked up by drop cloths.

END OF SECTION

SECTION 07 4646
FIBER CEMENT SIDING

PART 1 GENERAL

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1.01 LOCATIONS

- A. Install pre-purchased siding materials on house. Siding is fibercement lap with 6" exposure.
- B. Install pre-purchased siding materials on garage. Siding is fibercement lap with 6" exposure.
- C. Provide fibercement trim at all corners, windows, doors, band at top of wall and skirtboard band, as indicated on the Drawings.

1.02 SECTION INCLUDES

- A. Fiber cement siding and trim system.

1.03 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Siding substrate.
- B. Section 07 2500 - Weather Barriers: Weather barrier under siding.
- C. Section 09 9000 - Painting and Coating: Field painting.

1.04 REFERENCE STANDARDS

- A. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008.

1.05 PRE-PURCHASED MATERIALS

- A. Siding material FOR THE HOUSE AND GARAGE has been purchased by the HRA for this project. Delivery of all material to the job site is included in pre-purchase. Contractor is responsible for contacting specified vendor to arrange for and take delivery. Provide a bid price for labor and additional materials required to perform work to code.
 - 1. Vendor: Lampert Siding
 - 2. Pre-purchased materials:
 - a. Pre-primed Hardie Plank Siding and corner trim.

PART 2 PRODUCTS

2.01 SIDING

- A. Lap Siding: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment.
 - 1. Style: Standard lap style.
 - 2. Texture: Smooth.
 - 3. Length: 12 ft (3.7 m), nominal.
 - 4. Width (Height): 7-1/4 inches (184 mm), 6" exposure.
 - 5. Thickness: 5/16 inch (8 mm), nominal.
 - 6. Finish: Factory applied primer. Finish painting to be applied by contractor.
 - 7. Warranty: 50 year limited; transferable.

2.02 TRIM

- A. Fibercement trim, 1" thick, in widths as indicated on the Drawings. Smooth texture.

2.03 ACCESSORIES

- A. Weather Barrier: Textured, spunbonded polyolefin, non-woven, non-perforated, weather barrier is based upon DuPont™ Tyvek® DrainWrap™ and related assembly components.
 - 1. Performance Characteristics:
 - a. Air Penetration: 0.004 cfm/ft² at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677.
 - b. Water Vapor Transmission: 50 perms, when tested in accordance with ASTM E96, Method B.

- c. Water Penetration Resistance: 210 cm when tested in accordance with AATCC Test Method 127.
 - d. Basis Weight: 2.1 oz/yd², when tested in accordance with TAPPI Test Method T-410.
 - e. Air Resistance: 300 seconds, when tested in accordance with TAPPI Test Method T-460.
 - f. Tensile Strength: 30/30 lbs/in., when tested in accordance with ASTM D882, Method A.
 - g. Tear Resistance: 7/9 lbs, when tested in accordance with ASTM D1117.
 - h. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84. Flame Spread: 5, Smoke Developed: 25
2. Accessories
- a. Seam Tape: 2 or 3 inch wide, DuPont™ Tyvek® Tape as manufactured by DuPont Building Innovations.
 - b. Fasteners:
 - c. Tyvek® Wrap Caps, as manufactured by DuPont Building Innovations: #4 nails with large 1-inch plastic cap fasteners.
- B. Flashing: Provide aluminum flashing complying with Division 07 Section "Sheet Metal Flashing and Trim" at window and door heads and where indicated.
- 1. Finish for Aluminum Flashing: Siliconized polyester coating, same color as siding
- C. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4 inch (32 mm).
- D. Joint Sealer: Siliconized acrylic sealant between siding and all other components. ASTM C834, Type OP, Grade 18C; single component, paintable.
- 1. Product: RCS20 manufactured by Momentive Performance Materials (formerly GE Silicones).

PART 3 EXECUTION

3.01 PREPARATION

- A. Examine substrate and clean and repair as required to eliminate conditions that would be detrimental to proper installation.
- B. Replace damaged existing exterior wall sheathing with prior approval of Construction Manager.
- C. Verify that weather barrier has been installed over substrate completely and correctly.
- D. Do not begin until unacceptable conditions have been corrected.
- E. If substrate preparation is the responsibility of another installer, notify Construction Manager of unsatisfactory preparation before proceeding.
- F. Coordinate installation with flashings, windows and other adjoining construction, if applicable, to ensure proper sequencing
- G. Protect surrounding surfaces from damage related to siding work. Provide drop cloths to catch debris and fasteners.

3.02 WEATHER BARRIER INSTALLATION

- A. Install weather barrier over exterior face of exterior wall substrate in accordance with manufacturer recommendations.
- B. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to overlap.
- C. Apply wrap with grooved surface pattern in vertical direction.
- D. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface with grooved surface pattern in vertical position. Maintain weather barrier plumb and level.
- E. Extend bottom roll edge over sill plate 2" to 3". Seal weather barrier with sealant or tape. Shingle weather barrier over back edge of weep screed. Seal weather barrier with sealant or tape to weep screed. Ensure weeps are not blocked.

- F. Subsequent layers shall overlap lower layers a minimum of 6 inches horizontally in a shingling manner.
- G. Window and Door Openings: Extend weather barrier completely over openings.
- H. Weather Barrier Attachment:
 - 1. Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturer recommended fasteners, space 12 -18 inches vertically on center along stud line, and 24 inch on center, maximum horizontally.
- I. Seal seams of weather barrier with seam tape at all vertical and horizontal overlapping seams.
- J. Seal any tears or cuts as recommended by weather barrier manufacturer.

3.03 SIDING AND TRIM INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations.
 - 1. Read warranty and comply with all terms necessary to maintain warranty coverage.
 - 2. Use trim details indicated on drawings.
 - 3. Touch up all field cut edges before installing.
 - 4. Pre-drill nail holes if necessary to prevent breakage.
- B. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.
- C. Do not install siding less than 6 inches (150 mm) from surface of ground nor closer than 1 inch (25 mm) to roofs, patios, porches, and other surfaces where water may collect.
- D. After installation, seal all joints except lap joints of lap siding. Seal around all penetrations. Paint all exposed cut edges.

3.04 CLEANUP

- A. Touch-up, repair or replace damaged products before Substantial Completion.
- B. Remove debris related to siding installation work. Rake grounds and use magnetic head to pick up debris and fasteners fallen outside of drop cloths.

END OF SECTION

SECTION 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide prefinished aluminum fascia and vented soffit at roof edge on house and Garage.

1.02 SECTION INCLUDES

- A. Fabricated sheet metal items, including fascia and soffits.

1.03 REFERENCE STANDARDS

- A. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Pre-Finished Aluminum Soffit, Trim and Facia: ASTM B209 (ASTM B209M); 0.019 inch (____ mm) thick; plain finish shop pre-coated with modified silicone coating.
 - 1. Manufacturer: Edco.
 - 2. Style: 12" exposure in double 6-inch style vented soffit.
 - 3. Color: As scheduled.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Conform to drawing details.
- B. Secure soffit in place using concealed fasteners. Use exposed fasteners only where permitted.
- C. Fit soffits tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

END OF SECTION

SECTION 07 7123
MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

\$ _____

1.01 LOCATIONS

- A. Provide prefinished aluminum gutters, and downspouts, and extensions on garage roof.
- B. Provide precast concrete splashblock at each downspout location.
- C. Provide prefinished aluminum gutters, downspouts and downspout extensions on main roof of house.

1.02 SECTION INCLUDES

- A. Pre-finished aluminum gutters and downspouts.

1.03 REFERENCE STANDARDS

- A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2010.
- B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2010.
- C. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

1.04 DESIGN REQUIREMENTS

- A. Conform to applicable code for size and method of rain water discharge.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch (0.8 mm) thick.
 - 1. Finish: Plain, shop pre-coated with modified silicone coating.
 - 2. Color: Edco, as scheduled.

2.02 COMPONENTS

- A. Gutters: K style profile, seamless, one-piece aluminum gutter and guard
- B. Gutter Guard: seamless, one-piece aluminum gutter and guard
- C. Downspouts: SMACNA Rectangular profile.
 - 1. Size: 3X5
- D. Anchors and Supports: Profiled to suit gutters and downspouts.
 - 1. Gutter Supports: Brackets.
 - 2. Downspout Supports: Straps.
- E. Fasteners: Galvanized steel , with soft neoprene washers.

2.03 ACCESSORIES

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B. Where feasible, a minimum of 6' offset extension shall be installed at the ends of all downspouts to divert water away from foundation.
- C. Downspouts shall divert the entire water load in the direction of the rain garden according to the Landscape Plan.

END OF SECTION

SECTION 08 1100
EXTERIOR INSULATED METAL DOORS AND FRAMES

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide pre-hung metal-clad insulated Front and Rear Entry doors and frames.
- B. Provide full hardware set for Front and Rear Entry doors.
- C. Provide storm door for Front and Rear Entry doors.
- D. Garage service door, frame and hardware are included in the pre-purchased materials and installed under section 061000 Rough Carpentry.

PART 2 PRODUCTS

2.01 EXTERIOR PREHUNG METAL DOOR

- A. Front Doors:
 - 1. Product: Mastercraft, Craftsman
- B. Rear/Side Doors:
 - 1. Product: Mastercraft, Half Lite w/ Blinds - LT-10

2.02 ALUMINUM STORM DOORS

- A. Front Door
 - 1. Product: Larson, Oakley, or approved equivalent
- B. Rear/Side Doors
 - 1. Product: Larson, Oakley, or approved equivalent
- C. Color: White.

2.03 ACCESSORIES

- A. DOOR HARDWARE: Door hardware finish to be Satin Nickel
 - 1. Exterior Door Hardware: Schlage model 221-409x

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine doors and installed door frames before hanging doors.
 - 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 - 2. Reject doors with defects
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Use a expanding foam to insulate between the door frame and the rough opening.
- C. Set units plumb, level, and true-to-line, without warping or racking doors, and with specified clearances; anchor in place.
- D. Align and fit doors in frames with uniform clearances set by manufacturer.
- E. Seal edges of doors, edges of cutouts, and mortises after fitting and machining

3.03 SYSTEMS INTEGRATION

- A. Coordinate with low-voltage security contractor to install contacts in door.

3.04 ADJUSTING

- A. Adjust Doors for smooth operation.
- B. Operation: Rehang or replace doors that do not swing or operate freely.

END OF SECTION

SECTION 08 1429

WOOD DOORS

PART 1 GENERAL

1.01 LOCATIONS

- A. Provide new 4-panel wood doors, pre-hung in wood frames at Bathroom 1, Bathroom 2, Bedroom 1, Bedroom 2, Bedroom 3, Basement stair, and all closets with swinging doors. Casing included in section 062000 Finish Carpentry.
- B. Provide hardware sets at all new wood doors.
- C. Provide wood bifold doors at Bedroom 2 and Bedroom 3 closets.
- D. Adjust all existing and new doors to close without binding.

PART 2 PRODUCTS

2.01 INTERIOR WOOD DOORS

- A. Quality Level: Premium Grade, in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.
- B. Wood products that Emit Low or No Formaldehyde.
- C. Wood products that Emit Low or No VOC.
- D. Interior Doors: 1-3/8 inches (35 mm) thick unless otherwise indicated; solid lumber construction; mortised and tenoned joints.
 - 1. Wood: Maple, for field-applied stain finish.
 - 2. Door Type: 4-panel, prehung in solid wood frame where indicated in the door Schedule.

2.02 BIFOLD DOORS

- A. Wood, paneled, to match swinging doors.
- B. Hardware package to include top and bottom track, guides, hinges and fixed pulls, satin nickel finish.

2.03 HARDWARE

- A. Door hardware finish to be Satin Nickel
 - 1. Interior Door Hardware: Schlage Sienna.
 - 2. Privacy Lockset at bathroom.
 - 3. Hinges to match the lockset.
 - 4. Door stop.

2.04 DOOR CONSTRUCTION

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and AWI/AWMAC Quality Standards requirements.
- B. Trim door width by cutting equally on both jamb edges.
- C. Trim door height by cutting bottom edges to a maximum of 3/4 inch (19 mm).
- D. Machine cut for hardware.
- E. Coordinate installation of doors with installation of frames and hardware.

3.02 TOLERANCES

- A. Conform to specified quality standard for fit, clearance, and joinery tolerances.

END OF SECTION

SECTION 08 3323
OVERHEAD GARAGE DOORS

PART 1 GENERAL

1.01 SUMMARY

- A. Provide overhead garage door and electric opener with (2) remotes at new garage.

1.02 REFERENCE STANDARDS

- A. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.
- B. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC; National Electrical Manufacturers Association; 2000 (R2005).

PART 2 PRODUCTS

2.01 COILING DOORS

- A. Exterior Coiling Doors: Insulated Aluminum slat curtain.
 - 1. Guides: Formed track; galvanized steel.
 - 2. Electric operation.
 - 3. Mounting: Within framed opening.
 - 4. Exterior lock and latch handle.

2.02 ELECTRIC OPERATION

- A. Electric Operators: Chain Drive Garage Door Opener
 - 1. Motor Rating: 1/3 hp (250 W); continuous duty.
 - 2. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
 - 3. Controller Enclosure: NEMA 250 Type 1.
 - 4. Opening Speed: 12 inches per second (300 mm/s).
 - 5. Brake: Adjustable friction clutch type, activated by motor controller.
 - 6. Manual override in case of power failure.
- B. Control Station: Standard three button (OPEN-STOP-CLOSE) momentary control for each operator.
 - 1. 24 volt circuit.
- C. Safety Edge: Located at bottom of curtain, full width, electro-mechanical sensitized type, wired to stop operator upon striking object, hollow neoprene covered.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Complete wiring from disconnect to unit components.

3.02 ADJUSTING

- A. Adjust operating assemblies for smooth and noiseless operation.

3.03 CLEANING

- A. Clean installed components.
- B. Remove labels and visible markings.

END OF SECTION

SECTION 08 5213
METAL-CLAD WOOD WINDOWS

PART 1 - GENERAL

1.01 LOCATIONS

- A. Provide double hung windows throughout first floor, second floor and Attic. Note that most window sizes are changed from existing window sizes.

1.02 SECTION INCLUDES

- A. This Section includes:
 - 1. Clad wood windows.

1.03 RELATED REQUIREMENTS

- A. Section 061000- Rough Carpentry for wood shims at window sills.

1.04 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors; American Architectural Manufacturers Association; 2008.

1.05 PERFORMANCE REQUIREMENTS

- A. Performance Requirements: Energy Star Rated to meet Minnesota climate conditions. Climate Zone 6 for 2006 IECC, ASHRAE 90.1-2007 and ENERGY STAR.
- B. Performance Ratings: Meet AAMA/WDMA performance ratings as follows: minimum ODP 80 for air infiltration, DP40 for water infiltration, and DP40 for structural performance. Unit U-value of 0.34.
- C. VERIFY THAT AT LEAST ONE WINDOW OPENING IN EACH BEDROOM IS OF CODE-COMPLIANT EGRESS SIZE.

1.06 SUBMITTALS

- A. Product data for windows and flashing.
- B. Shop drawings and details.
- C. Color samples.

PART 2 - PRODUCTS

2.01 CLAD WOOD WINDOWS

- A. Basis of Design: Window specifications are based on products manufactured by Marvin Windows.
- B. Windows: Kiln dried wood, pre-primed and suitable for painted finish; water repellent and preservative treated; clad on the exterior with 0.055-inch thick extruded aluminum; sash corners slot and tenoned. Extrusion for frame may be different color than sash. Double hung type with top sash factory fixed in place for single-hung function, except fixed windows where indicated on Drawings. Operable sash may be tilted inward 90 degrees from bottom. Furnished with snap-on nailing fins or masonry clips where noted on drawings.
- C. Glass: Clear insulating Low E Maximizer Plus glass, 3/4" thick with a low-conductance spacer, argon filled. Fixed in place with interior, removable wood stops. Provide tempered glass in windows in hazardous locations as defined in International Residential Code. Solar heat gain coefficient of 0.33 maximum.
 - 1. Glass at window in stairway to basement shall have tempered insulated glass.
- D. Finish: Exterior aluminum cladding, color 'Cashmere', conforming to AAMA 2604. Interior wood to be stain finished under Section 09900 - Painting.
- E. Window Hardware:
 - 1. Surface Mounted Sash Lift: Zinc die-cast with plated bronze finish.
 - 2. Locks: Zinc die-cast cam lock and keeper with plated bronze finish.

- 3. Track: Vinyl extrusion, with Talon wood jamb liner on interior and aluminum exterior cover inserts.
- 4. Balancing System: Coil spring block and tackle system with nylon cord and fiber filled nylon clutch.
- F. Screens: Provide screens on all operable windows. Half screen only on all single-hung windows (lower sash only). In lieu of standard fiberglass mesh cloth on screens, equip units with charcoal gray coated aluminum mesh insect screens on operable sashes.

2.02 ACCESSORIES

- A. Sealant and Insulation: Fiberglass batt insulation and window manufacturer's highest quality recommended sealant. Color to match window exterior color on exterior application.
- B. Flexible Flashing: Flexible rubberized flashing, Tyvek "Flexwrap" peel-and-stick membrane, 70 mils thick, 9" wide.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Mock-up: Install job mock-up of window installation with flashing and procedures as outlined in WINDOW INSTALLATION SEQUENCE IN DRAWINGS. Obtain Construction Manager's approval of system for appearance and workmanship standard before proceeding with installing additional windows.
- B. Preparation: Prepare exterior sheathing and opening with air barrier and flashing as described in WINDOW FLASHING SEQUENCE on Drawings. Verify that size of rough opening vertically and horizontally is sufficient to allow for window unit, air barrier, flashings, shims, window anchorage accessories, chinking and sealant, etc. as described in the WINDOW FLASHING SEQUENCE and per window manufacturer's requirements.
- C. Installation: Comply with manufacturer's instructions. Set sash units plumb, level, and true to line, without warp or rack of frames and panels. Provide support and anchor tracks securely in place. Provide flashings, chinking and sealant as described in WINDOW FLASHING SEQUENCE in Drawings.
- D. Adjust operating sashes, screens, and hardware for a tight fit at contact points and weatherstripping for smooth operation and weathertight closure.

END OF SECTION

SECTION 09 0120
REPAIR OF PLASTER AND GYPSUM BOARD SURFACES

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide extensive patching at all Kitchen walls.
- B. Repair throughout house as needed following improvements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Lath or Backer Board: Regular type gypsum board, in thickness required by depth of patch.
- B. Caulking: Paintable, flexible caulking for bridging gaps and cracks less than 1/4" wide at inside corners.

2.02 ACCESSORIES

- A. Plastic Tarps.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protection of In-Place Conditions: Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.
- B. Provide protection for surrounding floors, surfaces, and areas to control dust and debris. Seal room openings in area of work with 6 mil poly sheeting. Protect surfaces at openings from damage by tape. Cover all vent and plumbing openings. Spray mist plaster areas to be disturbed and removed just prior to removal to control dust. Remove all loose and damaged plaster back to sound material. Provide gypsum board lath to fill maximum extent of repair area and provide base coat for veneer plaster. Screw gypsum board to structure, providing blocking if necessary.

3.02 REPAIR

- A. Walls and Ceilings: Repair interior surface(s) so that finish surface is smooth, even and properly prepared for finish application.
 - 1. Apply veneer plaster or drywall joint compound to repair area, meeting edges of existing plaster. Sand smooth and reapply until surface of patch appears continuous with existing wall surface.

3.03 CLEANING

- A. Remove and dispose of all debris and poly barriers related to plaster patch work.

END OF SECTION

SECTION 09 2116
GYPSUM BOARD INSTALLATION

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide gypsum drywall wall surfaces at all new partitions and infilled openings throughout the house.
- B. Provide water-resistant drywall at Bathroom 1 and Bathroom 2 ceilings and walls except at tub surround walls.
- C. Provide all new gypsum drywall ceiling finish throughout the first floor where the dropped ceiling was removed. Include furring on underside of existing second floor joists to allow for any original plaster ceiling thickness that may be remaining and to level to the ceiling plane.
- D. Provide one layer of Type X 5/8" thick gypsum drywall at interior side of Garage wall on west property line, and one layer of Type X 5/8" thick gypsum drywall on exterior side of Garage wall on west property line, under the exterior sheathing, to result in 1 hour fire rated wall construction.

1.02 SECTION INCLUDES

- A. Gypsum sheathing.
- B. Gypsum wallboard.
- C. Joint treatment and accessories.

1.03 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.

1.04 REFERENCE STANDARDS

- A. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).
- B. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2011.
- C. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.
- D. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing; 2012.
- E. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets; 1999 (Reapproved 2010).
- F. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2011.
- G. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2010.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
 - 1. See PART 3 for finishing requirements.

2.02 BOARD MATERIALS

- A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces, unless otherwise indicated.
 - 2. Thickness:
 - a. Vertical Surfaces: 1/2 inch (13 mm).
- B. Backing Board For Wet Areas: One of the following products:

1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
2. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
 - a. Thickness: 1/2 inch (12.7 mm).
 - b. Products:
 - 1) James Hardie Building Products, Inc; Hardibacker Cement Board.
- C. Ceiling Board: Special sag-resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 1. Application: Ceilings, unless otherwise indicated.
 2. Thickness: 1/2 inch (13 mm).
 3. Edges: Tapered.
- D. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
 1. Application: Exterior side of Garage west wall for fire rating, unless otherwise indicated.
 2. Core Type: Type X, as indicated.
 3. Type X Thickness: 5/8 inch (16 mm).
 4. Edges: Square, for vertical application.

2.03 ACCESSORIES

- A. Water-Resistive Barrier: As specified in Section 07 2500.
- B. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 1. Tape: 2 inch (50 mm) wide, creased paper tape for joints and corners, except as otherwise indicated.
 2. Ready-mixed vinyl-based joint compound.
 3. Powder-type vinyl-based joint compound.
 4. Chemical hardening type compound.
- C. Screws for Attachment to Steel Members Less Than 0.03 inch (0.7 mm) In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium-plated for exterior locations.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
 1. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.
- D. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For non-rated assemblies, install as follows:
 1. Single-Layer Applications: Screw attachment.

3.03 JOINT TREATMENT

- A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.

- B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

END OF SECTION

SECTION 09 3000

TILING

PART 1 GENERAL

\$ _____

1.01 LOCATIONS

- A. Provide tile backer board and full height ceramic tile finish at bathtub surround walls in both Bathrooms.
- B. Provide tile underlayment and ceramic tile flooring and base trim in both Bathrooms.
- C. Provide tile underlayment and ceramic tile flooring at Kitchen, including the floor area surrounding the Basement stairway opening.

1.02 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Cementitious backer board as tile substrate.
- D. Stone thresholds.
- E. Ceramic accessories.

1.03 REFERENCE STANDARDS

- A. ANSI A108 Series/A118 Series/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2011.
- B. ANSI A108.11 - American National Standard for Interior Installation of Cementitious Backer Units; 2011.
- C. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2011.
- D. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone Installation; 2011.
- E. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2008.
- F. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2011.

1.04 ALLOWANCES

- A. Allowances for Tile of \$3.00 per square foot.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of The Tile Council of North America Handbook and ANSI A108 Series/A118 Series on site.

1.06 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during installation of mortar materials.

PART 2 PRODUCTS

2.01 TILE

- A. Ceramic Tile, Kitchen: ANSI A137.1 and as follows:
 - 1. Manufacturer: Florim USA, IStone.
 - 2. Size and Shape: 12x12.
 - 3. Edges: Square.
 - 4. Surface Finish: Slate texture.
 - 5. Colors: Walnut.
- B. Ceramic Mosaic Floor Tile, Bathrooms : ANSI A137.1 , and as follows:
 - 1. Manufacturer: American Olean Colorbody Mosaic.

2. Edges: Square.
3. Surface Finish: Unglazed.
4. Colors: Two color pattern, Salt and pepper (1x2) and Black (1x1).
- C. Glazed Wall Tile Type Ceramic: ANSI A137.1 , and as follows:
 1. Manufacturer: American Olean Profiles Glazed Ceramic Tile
 2. Size and Shape: 3x6 (rectangular).
 3. Edges: Cushioned.
 4. Surface Finish: High gloss.
 5. Colors: White.
 6. Trim Units: Matching bead, bullnose, cove, and base shapes in sizes coordinated with field tile.

2.02 TRIM AND ACCESSORIES

- A. Ceramic Accessories: Glazed finish, same color and finish as adjacent field tile; same manufacturer as tile.
 1. Soap Dish: With handle, clam shell design, recess mounted; cast strength sufficient to resist lateral pull force of 75 lbs (34 Kg).
- B. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
 1. Applications: Use in the following locations:
 - a. Open Edges: Bullnose.
 - b. Inside Corners: Jointed.
 - c. Floor to Wall Joints: Cove base.
 2. Manufacturer: Same as for tile.
- C. Thresholds: Marble, white or gray, honed finish; 2 inches (50 mm) wide by full width of wall or frame opening; 1/2 inch (12 mm) thick; beveled one long edge with radiused corners on top side; without holes, cracks, or open seams.
 1. Applications: Provide at the following locations:
 - a. At doorways where tile terminates.
 - b. At open edges of floor tile where adjacent finish is a different height.

2.03 SETTING MATERIALS

- A. Mortar Bond Coat Materials for Thin-Set Installations:

2.04 GROUTS

- A. Standard Grout: Any type specified in ANSI A118.6 or A118.7.

2.05 THIN-SET ACCESSORY MATERIALS

- A. Waterproofing Membrane at Showers and Tiled Tubs: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 1. Type: Fluid-applied.
 2. Material: PVC sheet membrane, 40 mils (1 mm), thick, minimum.
 3. Products:
 - a. Mapei ; Mapleastic.
- B. Underlayment at Floors: Specifically designed for bonding to thin-set setting mortar; not primarily a waterproofing material and having the following characteristics:
 1. Crack Isolation: Comply with ANSI A118.12.
 2. Water Resistance: Comply with ANSI A118.10, bonded waterproofing.
 3. Uncoupling Function: Allow for separation between membrane and the mortar adhering tile to the membrane when subjected to excessive substrate movement.
 4. Suitable for installation over wood-based substrates.
 5. Do Not Use: Gypsum or cementitious based self-leveling underlayment.
- C. Cementitious Backer Board: ANSI A118.9; High density, cementitious, glass fiber reinforced, 1/2 inch (13 mm) thick; 2 inch (50 mm) wide coated glass fiber tape for joints and corners.

- D. Mesh Tape: 2-inch (50 mm) wide self-adhesive fiberglass mesh tape.

PART 3 EXECUTION

3.01 PREPARATION

- A. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
- B. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge.

3.02 INSTALLATION - GENERAL

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and The Tile Council of North America Handbook recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install ceramic accessories rigidly in prepared openings.
- G. Install thresholds at Bathroom doorways.
- H. Sound tile after setting. Replace hollow sounding units.
- I. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
- J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- K. Grout tile joints. Use standard grout unless otherwise indicated.
- L. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.03 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over wood substrates, install in accordance with The Tile Council of North America Handbook Method F142, with standard grout, unless otherwise indicated.
 - 1. Where epoxy bond coat and grout are indicated, install in accordance with The Tile Council of North America Handbook Method F143.
- B. Over wood substrate with backer board underlayment, install in accordance with The Tile Council of North America Handbook Method F144, for cementitious backer boards, with standard grout.

3.04 INSTALLATION - SHOWERS AND BATHTUB WALLS

- A. At bathtub walls install in accordance with The Tile Council of North America Handbook Method B412, over cementitious backer units with waterproofing membrane.
- B. Grout with standard grout as specified above.
- C. Seal joints between tile work and other surfaces in Bathrooms with silicone sealant, color to match tile.

3.05 CLEANING

- A. Clean tile and grout surfaces.

3.06 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 09 6219
LAMINATE FLOORING

PART 1 - GENERAL

\$ _____

1.01 SUMMARY

- A. Provide laminate flooring at entire first floor, except Bathroom 1 and Kitchen.

1.02 ALLOWANCES

- A. Allowances for Material, including flooring and underlayment, \$4.50 per square feet.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Provide concealed fastening wherever possible.
 - 1. Attachment considerations shall take into account site peculiarities and expansion and contraction movements so there is not possibility of loosening, weakening, buckling, or fracturing connection between wood flooring and substrate.

1.04 QUALITY ASSURANCE

- A. Single Source Responsibility: Furnish laminate flooring from one manufacturer for Residential Units unless otherwise acceptable to Project Manager.
- B. Composite-wood Products: Contain no urea formaldehyde.
- C. Installer Qualifications: Acceptable to manufacturer with experience on at least five projects of similar nature in past five years.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect materials from damage, moisture, soiling and deterioration during transit and storage.
- B. Do not deliver flooring materials until Project site conditions and operations which could damage, soil or deteriorate work are complete.
- C. Store products and materials in ventilated, interior locations under constant minimum temperature and relative humidity recommended by manufacturer.

1.06 FIELD CONDITIONS

- A. Environmental Requirements: Obtain and maintain temperature and moisture conditions as recommended by laminate flooring manufacturer during installation and remainder of construction period.

PART 2 - PRODUCTS

2.01 LAMINATE FLOORING

- A. Description: Laminate flooring (Direct Pressure Laminate) consisting of four layered construction, Four layered thermal fused process includes smooth, abrasion resistant wear surface composed of cellulose paper saturated with melamine resin embedded with aluminum oxide to provide stain and scratch resistance, VTX print saturated with melamine resin to provide fade resistance, high density fiberboard core with technology to add moisture resistance, and melamine saturated balanced backing paper for added dimensional stability.
- B. Basis of Design: Tarkett series to be selected by Project Manager. Selected from currently available Collection in 4.92 inches width x 47.24 inches length having nominal total gauge of 0.47 inch.
- C. Other Acceptable Manufacturers:
 - 1. Pergo Laminate Floors, Mediterranean Kempas.

2.02 ACCESSORIES

- A. Transition Pieces: Provide coordinating transitions and moulding pieces designated for L8706 to meet installation application for finishing and transitioning to other flooring products.
- B. Primer and Adhesive: Manufacturer's recommended for conditions.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions and proceed with work in accordance with Section 01 40 00.
 - 1. Verify that substrates comply with manufacturer's requirements.
 - 2. Verify that substrate is clean, dry, free of voids and cracks.

3.02 PREPARATION

- A. Preparation:
 - 1. Remove ridges, bumps, trowel marks and protrusions from substrate.
 - 2. Clean substrate to remove paint, dirt, oil, grease, sealers, release agents, hardening compounds, curing compounds, residual adhesives, and harmful substances which could impair performance of adhesive materials used with flooring products.
 - 3. Fill depressions, low spots, cracks, joints, holes, indentations, and other defects with leveling and patching compounds. Trowel to smooth, flat surface producing substrate to within tolerance of 1/4 inch in 10 feet.
 - 4. Vacuum clean substrate.
 - 5. Prime substrate in accordance with manufacturer's requirements.

3.03 LAMINATE FLOORING INSTALLATION

- A. Install flooring and adhesive in accordance with manufacturer's recommendations.
 - 1. Install laminate flooring plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction.
 - 2. Roll flooring immediately after installation with minimum 100 pounds roller.
 - 3. Install flooring wall to wall before installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets, and similar openings.
 - 4. Scribe, cut, and fit to permanent fixtures, columns, walls, partitions, pipes, outlets, and built-in furniture and cabinets leaving required expansion of 1/4 inch to 1/2 inch.
 - 5. Install flooring with adhesives, tools, and procedures in accordance with manufacturer's recommendations. Observe recommended adhesive trowel notching, open times, and working times.
- B. Transition Pieces: Install coordinated transitions and molding pieces in accordance with manufacturer's recommendations.

3.04 CLEANING AND PROTECTION

- A. Cleaning: Clean as recommended by manufacturer. Do not use materials or methods which may damage finish and surrounding construction.
 - 1. Remove excess adhesive from floor surface as work progresses.

END OF SECTION

SECTION 09 6800

CARPETING

PART 1 GENERAL

\$ _____

1.01 LOCATIONS

- A. Provide pad and stretched in carpet at Stairway to second floor, Hall and all Bedrooms on second floor.

1.02 REFERENCE STANDARDS

- A. CRI (CIS) - Carpet Installation Standard; Carpet and Rug Institute; 2009.
- B. CRI (GLCC) - Green Label Testing Program - Approved Product Categories for Carpet Cushion; Carpet and Rug Institute; Current Edition.
- C. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute; Current Edition.

1.03 ALLOWANCES

- A. Allowance for carpeting \$18.00 per square yard.

1.04 FIELD CONDITIONS

- A. Maintain minimum 70 degrees F (21 degrees C) ambient temperature 24 hours prior to, during and 24 hours after installation.
- B. Ventilate installation area during installation and for 72 hours after installation.

PART 2 PRODUCTS

2.01 CARPET

- A. Carpet Type Shaw Anso Yarn Texture Serenity Garden: Tufted, nylon, conforming to the following criteria:
 - 1. FHA Approved
 - 2. VOC Content: Provide CRI Green Label Plus certified product; in lieu of labeling, independent test report showing compliance is acceptable.
 - 3. Color: 78108 Barn Wood.

2.02 CUSHION

- A. Cushion: Cellular rubber:
 - 1. VOC Content: Provide CRI Green Label Plus certified product; in lieu of labeling, independent test report showing compliance is acceptable.

2.03 ACCESSORIES

- A. Tackless Strip: Carpet gripper, of type recommended by carpet manufacturer to suit application, with attachment devices.
- B. Seam Adhesive: Recommended by manufacturer.

PART 3 EXECUTION

3.01 PREPARATION

- A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.
- B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- C. Clean substrate.

3.02 INSTALLATION - GENERAL

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install carpet and cushion in accordance with manufacturer's instructions and CRI Carpet Installation Standard.

- C. Verify carpet match before cutting to ensure minimal variation between dye lots.
- D. Lay out carpet and locate seams in accordance with shop drawings:
 - 1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
 - 2. Do not locate seams perpendicular through door openings.
 - 3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
 - 4. Locate change of color or pattern between rooms under door centerline.
 - 5. Provide monolithic color, pattern, and texture match within any one area.
- E. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.

3.03 STRETCHED-IN CARPET

- A. Install tackless strips with pins facing the wall around entire perimeter, except across door openings. Use edge strip where carpet terminates at other floor coverings.
- B. Space tackless strips slightly less than carpet thickness away from vertical surfaces, but not more than 3/8 inch (9 mm).
- C. Install cushion in maximum size pieces using spot adhesive to adhere to sub-floor.
- D. Lay out cushion so that seams will be perpendicular to, or offset from, minimum 6 inches (150 mm) from carpet seams.
- E. Butt cushion edges together and tape seams.
- F. Trim cushion tight to edge of tackless strip and around projections and contours.
- G. Double cut carpet seams, with accurate pattern match. Make cuts straight, true, and unfrayed. Apply seam adhesive to all cut edges immediately.
- H. Join seams by hand sewing. Form seams straight, not overlapped or peaked, and free of gaps.
- I. Following seaming, hook carpet onto tackless strip at one edge, power stretch, and hook firmly at other edges. Follow manufacturer's recommendations for method and amount of stretch.
- J. The carpet should be stretched to eliminate puckers, scallops and ripples.
- K. Trim carpet neatly at walls and around interruptions. Tuck edges into space between tackless strip and wall.

3.04 INSTALLATION ON STAIRWAY

- A. Install tackless strips at back of treads, with pins facing riser, and at bottom of riser, with pins facing tread.
- B. Install cushion on stair treads and lap over nosing.
- C. Install carpet on stairs with the run of the pile in opposite direction of anticipated traffic to avoid peaking of backing at nosings.
- D. Stretch carpet over stair treads, full width in one piece. Fold carpet under 1-1/2 inches (40 mm) on each side.

3.05 CLEANING

- A. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 9000
PAINTING AND COATING

PART 1 GENERAL

\$ _____

1.01 LOCATIONS

- A. Paint all exterior fibercement siding and trim on house and Garage.
- B. Paint Front Porch trim, columns, railing and soffit.
- C. Stain and seal decking at Front Porch, porch steps, Rear Deck and Rear Deck steps.
- D. Stain railing at Rear Deck.
- E. Paint all walls and ceilings throughout the first floor and second floor. Paint closets same as adjacent rooms.
- F. Stain and finish all new interior wood doors, frames, base trim, base shoe and casings.
- G. Paint previously painted wood trim at stairway to second floor. Requires encapsulation of existing lead containing paint finish.
- H. Paint all previously-painted wood columns in Basement.
- I. Refer to color and material selections for more information.

1.02 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints, stains, varnishes, and other coatings.
- C. Surfaces to be finished are indicated in this section and on the Drawings.
- D. Joint sealants.

1.03 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.04 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com.
- C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Master Painters and Decorators Association; 2004.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Paints and Coatings: Sherwin Williams Low VOC or any manufacturer listed in MPI Approved Products List (at www.paintinfo.com) approved by Project Manager.
 - 1. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
 - 2. Provide all paint and coating products from the same manufacturer to the greatest extent possible.
- B. Stains: Minwax Low VOC or any other manufacturer approved by Project Manager

2.02 MATERIALS - GENERAL

- A. Volatile Organic Compound (VOC) Content:
 - 1. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. Flat: 50 grams/Liter
 - b. Non-Flat: 50 grams/Liter
 - c. Floor Coating: 100 grams/Liter
 - d. Anti-Corrosive: 250 grams/Liter
 - 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

2.03 PAINT SYSTEMS

- A. Provide Premium Grade systems (2 top coats) as defined in MPI Architectural Painting Specification Manual, except as otherwise indicated.
- B. Where a specified paint system does not have a Premium Grade, provide Custom Grade system.
- C. Where sheen is not specified or more than one sheen is specified, sheen will be selected later by Construction Manager from the manufacturer's full line.
- D. Provide smooth texture throughout.

2.04 EXTERIOR PAINT SYSTEMS

- A. Cementitious Composition Board:
 - 1. _____: EXT 3.3A Latex: Latex MPI #10, 11, 15 or 119.
- B. Dressed Lumber:
 - 1. _____: EXT 6.3A Latex: Oil/Alkyd Primer MPI #5 or #7, Latex MPI #10, 11, 15 or 119.
- C. Wood Traffic Surfaces:
 - 1. Applications include but are not limited to Decks, Steps, and Porch floor.
 - 2. EXT 6.5D Deck Stain: Wood Preservative MPI #37, Deck Stain MPI #33.

2.05 INTERIOR PAINT SYSTEMS

- A. Dressed Lumber:
 - 1. Applications include but are not limited to doors, door frames, window frames, window casings, trim, baseboards, and moldings.
 - 2. _____: INT 6.3A High Performance Architectural Latex: Latex Primer MPI #39, HIPAC Latex MPI #138, 139, 140 or 141.
 - a. _____: Gloss level 2.
 - 3. _____: INT 6.3C Semi-Transparent Stain: Wood Stain MPI #90.
 - 4. _____: INT 6.3E Polyurethane Varnish (over stain): Wood Stain MPI #90, Polyurethane Varnish MPI #56 or 57.
 - a. Fill open grain with wood filler paste MPI #91 before finishing.
 - b. _____: Satin.
- B. Plaster and Gypsum Board:

1. Applications include but are not limited to walls, ceilings, soffits, and bulkheads.
2. _____: INT 9.2A Latex: Latex Primer Sealer MPI #50, Latex #43, 44, 52, 53, 54 or 114.
3. _____: INT 9.2B High Performance Architectural Latex: Latex Primer Sealer MPI #50, HIPAC Latex MPI #138, 139, 140 or 141.
 - a. _____: Gloss level 2.
 - b. _____: Gloss level 3 at Kitchen and Bathrooms.

2.06 JOINT SEALANTS

- A. Exterior sealants:
 1. Silicone, ASTM C920, Grade NS, Class 100/50, Uses M, G, O, and A; single component.
 - a. Product:
 - b. Color: Match adjacent finished surfaces.
 - c. Use for:
 - 1) Joints between concrete and other materials.
 - 2) Joints between metal frames and other materials.
 - 3) Joints between doors and windows and other materials.
 - 4) Other exterior joints for which no other sealant is indicated.
- B. Interior sealants:
 1. Paintable silicone, ASTM C920, Type S, Grade NS, Class 25, Uses G, A, & O.
 - a. Product: GE Silicone II manufactured by Momentive Performance Materials, Inc.
 - b. Use for vertical surfaces and horizontal non-traffic surfaces:
 - 1) Perimeter joints of exterior openings.
 - 2) Horizontal joints between kitchen countertops/backsplash and gypsum board walls.
 - 3) Horizontal joints between window sills and jamb / head extensions.
 - 4) Other interior joints for which no other type of sealant is indicated.

PART 3 EXECUTION

3.01 SCOPE -- SURFACES TO BE FINISHED

- A. Paint all exposed surfaces except where indicated not to be painted or to remain natural; the term "exposed" includes areas visible through permanent and built-in fixtures when they are in place.
- B. Paint the surfaces described in PART 2 and as follows:
 1. If a surface, material, or item is not specifically mentioned, paint in the same manner as similar surfaces, materials, or items, regardless of whether colors are indicated or not.
 2. Paint surfaces behind movable equipment and furnishings the same as similar exposed surfaces.
 3. Paint surfaces to be concealed behind permanently installed fixtures, equipment, and furnishings, using primer only, prior to installation of the permanent item.
 4. Paint back sides of access panels and removable and hinged covers to match exposed surfaces.
- C. Do Not Paint or Finish the Following Items:
 1. Items fully factory-finished unless specifically noted; factory-primed items are not considered factory-finished.
 2. Items indicated to receive other finish.
 3. Items indicated to remain naturally finished.
 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.

3.02 EXAMINATION

- A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

- C. Test shop-applied primer for compatibility with subsequent cover materials; report incompatible primer conditions and submit recommended changes for Construction Manager's approval.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Plaster and Gypsum Board: 12 percent.
 - 2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
 - 3. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.03 PREPARATION

- A. Prepare surfaces as specified in MPI Architectural Painting Specification Manual and as follows for the applicable surface and coating; if multiple preparation treatments are specified, use as many as necessary for best results; where the Manual references external standards for preparation (e.g. SSPC standards), prepare as specified in those standards; comply with coating manufacturer's specific preparation methods or treatments, if any.
- B. Coordinate painting work with cleaning and preparation work so that dust and other contaminants do not fall on newly painted, wet surfaces.
- C. Surface Appurtenances: Prior to preparing surfaces or finishing, remove electrical plates, hardware, light fixtures, light fixture trim, escutcheons, machined surfaces, fittings, and similar items already installed that are not to be painted.
 - 1. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before preparation and finishing.
 - 2. After completing painting in each space or area, reinstall items removed using workers skilled in the trades involved.
- D. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.
- E. Marks: Seal with shellac those which may bleed through surface finishes.
- F. Impervious Surfaces: Remove mildew by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- H. Plaster Surfaces to be Painted: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- I. Interior Wood Items to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- J. Interior Wood Items to Receive Transparent Finish: Sand wood to obtain a uniform appearance before immediately starting work. Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.
- K. Exterior Wood to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.
- L. Exterior Wood to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior calking compound after sealer has been applied. Prime concealed surfaces.

3.04 APPLICATION

- A. Apply products in accordance with manufacturer's instructions and as specified or recommended by MPI Manual, using the preparation, products, sheens, textures, and colors as indicated.

1. Remove, refinish, or repaint work not complying with requirements.
- B. Do not apply finishes over dirt, rust, scale, grease, moisture, scuffed surfaces, or other conditions detrimental to formation of a durable coating film; do not apply finishes to surfaces that are not dry.
- C. Use applicators and methods best suited for substrate and type of material being applied and according to manufacturer's instructions.
 1. Brush Application: Use brushes best suited for the type of material applied; use brush of appropriate size for the surface or item being painted; produce results free of visible brush marks.
 2. Roller Application: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 3. Spray Application: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
 4. Where application method is listed in the MPI Manual for the paint system that application method is required; otherwise any application method recommended by manufacturer for material used and objects to be painted is acceptable.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate; provide total dry film thickness of entire system as recommended by manufacturer.
 1. Number of coats and film thickness required are the same regardless of application method.
 2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.
 3. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent to that of flat surfaces.
- E. Apply finish to completely cover surfaces with uniform appearance without brush marks, runs, sags, laps, ropiness, holidays, spotting, cloudiness, or other surface imperfections.
- F. Before applying finish coats, apply a prime coat of material recommended by manufacturer, unless the surface has been prime coated by others; where evidence of suction spots or unsealed areas in first coat appear, recoat primed and sealed surfaces to ensure finish coat with no burn through or other defects due to insufficient sealing.
- G. Apply first coat to surface that has been cleaned, pretreated, or otherwise prepared as soon as practical after preparation and before subsequent surface deterioration.
- H. Do not apply succeeding coats until the previous coat has cured as recommended by manufacturer.
- I. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat will not cause the undercoat to lift or lose adhesion.
- J. If manufacturer's instructions recommend sanding to produce a smooth, even surface, sand between coats.
- K. Before applying next coat vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

3.05 CLEANING AND PROTECTION

- A. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from site.
- C. Protect other work, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting as approved by Construction Manager.
- D. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

- E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in MPI Manual.

3.06 SCHEDULE - COLORS

END OF SECTION

SECTION 10 5623
CLOSET STORAGE SHELVING

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide closet rod and shelving in all closets.

1.02 SECTION INCLUDES

- A. Wall mounted wire closet shelving.
- B. Accessories.

PART 2 PRODUCTS

2.01 SHELVING APPLICATIONS

- A. Shelf Depth: 12 inches (305 mm), unless otherwise indicated.
- B. Bedroom Closets:
 - 1. Wall-to-wall shelf with free sliding hanger rod.
 - 2. Not less than 4 feet (1.25 m) of shoe shelf.
- C. Coat Closets:
 - 1. Wall-to-wall shelf with integral hanger rod.
- D. Linen Closets:
 - 1. Wall-to-wall shelves spaced at 13 inch (330 mm) vertically, not less than 16 inch (408 mm) deep.

2.02 MATERIALS

- A. Wire Shelving: Factory-assembled coated wire mesh shelf assemblies for wall-mounting, with all components and connections required to produce a rigid structure that is free of buckling and warping.
 - 1. Construction: Cold-drawn steel wire with average tensile strength of 100,000 psi (690 MPa) resistance welded into uniform mesh units, square, rigid, flat, and free of dents or other distortions, with wires trimmed smooth.
 - 2. Coating: PVC or epoxy, applied after fabrication, covering all surfaces.
 - 3. PVC Coating: 9 to 11 mils (0.23 to 0.028 mm) thick.
 - 4. Epoxy Coating: Non-toxic epoxy-polyester powder coating baked-on finish, 3 to 5 mils (0.76 to 1.27 mm) thick.
 - 5. Standard Mesh Shelves: Cross deck wires spaced at 1 inch (25.4 mm).
 - 6. Shelf and Rod Units: Integral hanging rod at front edge of shelf.
 - 7. Free-Sliding Hanging Rod: Integral hanging rod that permits uninterrupted sliding of hangers the full width of the shelf.
 - 8. Shoe Shelves: Same wire spacing as standard mesh shelves; angled wall brackets; upturned front lip.
- B. Mounting Hardware: Provide manufacturer's standard mounting hardware; include support braces, wall brackets, back clips, end clips, poles, and other accessories as required for complete and secure installation; factory finished to match shelving.
- C. Fasteners: As recommended by manufacturer for mounting substrates.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions, with shelf surfaces level.
- B. Cap exposed ends of cut wires.
- C. Install back clips, end clips at side walls, and support braces at open ends. Install intermediate support braces as recommended by manufacturer.
- D. Mounting Heights:

1. Single Hanging Rod Units: Install shelf at 68 inches (1727 mm) above floor.
2. Double Hanging Rod Units: Install shelves at 42 inches (1067 mm) and 84 inches (2134 mm) above floor.
3. Shoe Shelves: Front edge at 4 inches (200 mm) above floor.

END OF SECTION

SECTION 11 3100
HRA RESIDENTIAL APPLIANCES

PART 1 GENERAL

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1.01 LOCATIONS

- A. Laundry appliances are pre-purchased and include: Energy Star washer and gas dryer.
- B. Kitchen appliances are pre-purchased and include Energy Star refrigerator, microwave range hood, Energy Star dishwasher, gas range.

1.02 SECTION INCLUDES

- A. Kitchen appliances.
- B. Laundry appliances.

1.03 SUMMARY

- A. All appliances must be purchased new and Energy Star certified or high efficiency models when Energy Star certification is not possible.
- B. All appliances must meet the Sustainable Design Requirements covered in Section 018113

1.04 PRICE AND PAYMENT PROCEDURES

- A. Appliances have been pre-purchased by the HRA for this project. Delivery of all material to the job site is included in pre-purchase. Contractor is responsible for contacting specified vendor to arrange for and take delivery. Provide a bid price for labor and additional materials required to perform work to code.
 - 1. Vendor: All, Inc. Appliances

1.05 QUALITY ASSURANCE

- A. Electric Appliances: Listed and labeled by UL and complying with NEMA standards.
- B. Gas Appliances: Bearing design certification seal of AGA.

PART 2 PRODUCTS

2.01 KITCHEN APPLIANCES

- A. Refrigerator: Frigidaire FFHT2126LS/K Energy Star Rated 21 cu ft top mounted refrigerator, stainless steel, with icemaker.
- B. Range: Frigidaire FFGF3053LS 30" Free-standing Gas Range, Self Clean, Clock.
- C. Microwave/Hood: Frigidaire FFMV162LS Over the Range Micro/Hood, vented to exterior, stainless steel.
- D. Dishwasher: Frigidaire FGHD2433KF Energy Star 24" Built-in Dishwasher, including dishwasher cord, stainless steel.

2.02 LAUNDRY APPLIANCES

- A. Washer: Frigidaire FAFW3801LW Energy Star Residential Front Load Washer.
- B. Dryer: Frigidaire FAQG7001LW Residential Gas Dryer.

PART 3 EXECUTION

3.01 INSTALLATION

- A. All appliances shall be uncrated, cleaned and readied for use.
- B. Installation shall include all cord attachments, wiring, plumbing and gas hook ups necessary for appliance operation.
- C. Install in accordance with manufacturer's instructions.
- D. Anchor built-in equipment in place.

END OF SECTION

SECTION 12 1110
HRA MAIL BOX AND HOUSE NUMBERS

PART 1 GENERAL

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1.01

- A. Provide wall-mounted mail box adjacent to front entry door.
- B. Provide three-digit house numbers at Front Porch and alley side of Garage, centered above the overhead garage door.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Mailbox: black enamel finish, letter-sized mail box with magazine rack and lock-eye for padlock.
- B. House numbers: 3" high metal or PVC house numbers on a 1" x 4" pine backer board painted with 2 coats exterior white latex paint.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

END OF SECTION

**SECTION 12 1111
BATHROOM FURNISHINGS**

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide Bathroom accessories in both Bathrooms consisting of: shower curtain rod, toilet paper holder, 2-24" towel bars, towel ring and medicine cabinet.

PART 2 PRODUCTS

2.01 TOWEL BARS AND TOILET PAPER HOLDER

- A. Install a metal bath set comprised of two 24" towel bars, towel ring and toilet paper holder.
- B. Manufacturer: Moen Toilet Accessories
 - 1. Hand Towel Ring: Model # DN6886xx
 - 2. Towel Bar: Model # DN6818xx
 - 3. Toilet Paper Holder: Model # DN6808xx
- C. Brushed nickel finish to match faucet.

2.02 MEDICINE CABINET

- A. Install a medicine cabinet with hinged plate glass mirror and two shelves over the sink.
- B. Manufacturer: Pace, Meadowood Maple. Model # SMC-2530

2.03 SHOWER CURTAIN ROD

- A. Install a shower curtain rod using wall anchors.
- B. Manufacturer: Moen, Adjustable Shower Rod. Model # DN2160xx.
- C. Brushed nickel finish to match faucet.

PART 3 EXECUTION

3.01 INSTALLATION

- A. A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

END OF SECTION

SECTION 12 3530
RESIDENTIAL CASEWORK

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide Kitchen cabinets and countertop in configuration as indicated on the Drawings.
- B. Provide Bathroom vanity cabinet and cultured marble vanity top in each Bathroom.

1.02 SECTION INCLUDES

- A. Kitchen countertops.
- B. Kitchen cabinets.
- C. Vanity cabinets.
- D. Vanity countertops.
- E. Casework hardware.

1.03 REFERENCE STANDARDS

- A. ANSI/KCMA A161.1 - Performance and Construction Standard for Kitchen and Vanity Cabinets; Kitchen Cabinet Manufacturers Association; 2000 (R2006).

1.04 QUALITY ASSURANCE

- A. Products: Complying with KCMA A161.1 and KCMA Certified.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. The HRA has approved Shrock Select, Medallion or Mid-Continent.

2.02 COMPONENTS

- A. See Product Selection Sheet for cabinet style and finish.
- B. Bathroom Vanity Cabinet: Single 36 inch Vanity Cabinet and 48 inch Vanity Cabinet.
- C. Cabinet Construction: Plywood sides and bases.
- D. Kitchen Countertop: Post formed plastic laminate over particle board, coved to back splash.
 - 1. Side Splash: Plastic laminate over particle board, square internal intersections to back splash and top surface, contoured to suit counter top profile.
 - 2. Manufacturer: WilsonArt, Canyon Black: 1755-1
- E. Vanity Countertop: Cultured marble oval bowl vanity top with integral bowl.
 - 1. Side SPLash: Cultured marble.
 - 2. Manufacturer: Imperial Marble, RC3722SPW and RC4922SPW, white.
- F. Door and Drawer Fronts: Solid wood.
- G. Drawer Box Construction: Plywood with dovetail joinery

2.03 HARDWARE

- A. Hardware: See product selection sheet.

2.04 FABRICATION

- A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
- B. Fabricate corners and joints without gaps or inaccessible spaces or areas where dirt or moisture could accumulate.
- C. Form smooth edges. Form material for countertops, shelves, and drain boards from continuous sheets.
- D. Provide cutouts for plumbing fixtures, appliances, and fixtures and fittings. Prime paint contact surfaces of cut edges.

- E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
- F. Provide finished end panels on cabinet sides exposed to view.

2.05 FINISHES

- A. Exposed to View Surfaces: Stain, seal, and varnish as listed in Color & Material selections.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install casework, components and accessories in accordance with manufacturer's instructions.
- B. Set casework items plumb and square, securely anchored to building structure.

3.02 ADJUSTING

- A. Adjust doors, drawers, hardware, fixtures, and other moving or operating parts to function smoothly.

END OF SECTION

SECTION 22 3000
PLUMBING EQUIPMENT

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide high-efficiency water heater. Vent through joist space to exterior. Coordinate with HVAC work to provide adequate fresh air.
- B. Coordinate installation of water meter.
- C. Coordinate with Plumbing Fixtures and Piping

1.02 SPECIAL COORDINATION

- A. Upgrade of Water Meter.
 - 1. Contact: Northern Water Works. (888) 497-4171.
 - 2. There is no cost associated with the purchase or installation of the Water Meter. The only cost associated with this bid is for the coordination with Northern Water Works to install the meter.

1.03 SUBMITTALS

- A. Product Data:
 - 1. Provide Owner's Manuals for all equipment.

PART 2 PRODUCTS

2.01 RESIDENTIAL SEALED-COMBUSTION POWER-VENTED WATER HEATER

- A. GENERAL REQUIREMENTS
 - 1. Unit shall have an EF of 0.67, be AGA certified and have intermittent electronic ignition, glass lined tank, dip tube, screw in magnesium anode rods, turbo shot combustion system. ASME Temperature & Pressure relief valve piped to the floor, 5 year tank warranty, ASHRAE 90.1b-1992 and NAECA compliant, and draft switch. Provide PVC power vent to exterior.
 - 2. The water heater shall be surrounded with a minimum of 2 inches of CFC/HCFC-free rigid polyurethane foam insulation with an equivalent "R" value of R-16.
- B. MANUFACTURER: A.O. Smith or like product approved by Project Manager
 - 1. Hot water tank shall have ETL certification.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions of certification, if any.
- B. Coordinate with plumbing piping and related fuel piping work to achieve operating system.
- C. Hot water tank shall be installed by a heating contractor whose principal occupation is the sale and installation of plumbing, heating, and or air conditioning equipment and shall be installed in compliance with all applicable codes.
- D. Provide water & gas supply & flue piping

END OF SECTION

SECTION 22 4000
PLUMBING FIXTURES AND PIPING

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide all new plumbing supply, waste and vent piping system throughout the house.
- B. Provide two exterior frost-proof hose bibbs, one on south foundation wall and one on east foundation wall near front corner of house.
- C. Provide approved lever handle manual building shutoff gas valve in an accessible location ahead of the first branch tee.
- D. Conduct witnessed pressure test on gas piping system.
- E. Provide gas piping and shutoff valve for gas dryer, gas furnace and gas water heater in Basement.
- F. Provide gas piping and shutoff valve for gas range in Kitchen.
- G. Provide utility tub and faucet in new location in Basement.
- H. Provide washing machine supply and drain piping and shut-offs in Basement.
- I. Provide bathtub, toilet, tub/shower fixtures and vanity faucet in each Bathroom.
- J. Provide sink and faucet in Kitchen.
- K. Install dishwasher in Kitchen. Dishwasher is pre-purchased.
- L. Provide water line from Kitchen sink to refrigerator for icemaker. Run tubing concealed in wall or floor. Refrigerator is pre-purchased.
- M. Provide sump pump and drain line to exterior at existing sump pit in Basement.

1.02 REFERENCE STANDARDS

- A. ASME A112.18.1 - Plumbing Supply Fittings; The American Society of Mechanical Engineers; 2011.
- B. ASME A112.19.4M - Porcelain Enameled Formed Steel Plumbing Fixtures; The American Society of Mechanical Engineers; 1994 (R2004).
- C. ASME A112.19.14 - Six Liter Water Closets Equipped with Dual Flushing Device; 2006.

PART 2 PRODUCTS

2.01 SINKS AND FAUCETS

- A. Kitchen Sink:
 - 1. Sink: 22 gauge 33"x22"x8" double bowl, stainless steel, self rimming kitchen sink. Manufacturer: Moen, Model number 2212, or like product to be approved by Project Manager
 - 2. Faucet: Manufactured by Moen, Model 7825 or like product to be approved by Project Manager
 - a. Flow Rate: 1.5 GPM maximum
- B. Laundry Tub:
 - 1. Sink: Single bowl, 24" fiberglass laundry tub with metal legs.
 - 2. Faucet: 1.5 GPM
- C. Bathroom Vanity:
 - 1. Faucet: Single lever faucet with 1.5 GPM maximum flow rate
 - a. Low Arch Faucet: Manufactured by Moen, Model number (Nickel) CA84002CBN
- D. Shower/Tub Faucet:
 - 1. Shower/Tub Faucet: Manufactured by Moen, Model number (Nickel) 82008CBN.

2.02 DUAL FLUSH TOILET

- A. Dual Flush Water Closets: ASME A112.19.14; high efficiency and low consumption (1.2 GPF), vitreous china, dual flush, tank type.
 - 1. Bowl: Elongated.
 - 2. Flush Actuator: Manufacturer's standard.
 - 3. Rough in: 12 inch (305 mm).
 - 4. Seat: Manufacturer's standard or recommended elongated closed front seat with lid.
 - 5. Color: White.

2.03 BATHTUBS

- A. Bathtub: ASME A112.19.4M porcelain on steel bathtub with slip resistant surface, contoured front apron, 60 inches (1500 mm) long, white color.
- B. Bath and Shower Trim: ASME A112.18.1; concealed shower and over rim supply with diverter spout, pressure balanced mixing valve, bent shower arm with adjustable spray ball joint showerhead with maximum 1.5 gallons per minute (5.6 liters per minute) flow and escutcheon, lever operated pop-up waste and overflow.

2.04 SEALANTS

- A. Silicone sealant between fixtures and all dissimilar materials. White silicone; ASTM C920, Grade NS, Class 100/50, Uses I, M, NT and A; single component, mildew resistant.

2.05 PIPING

- A. Waste and Vent: PVC or ABS.
- B. Supply.
- C. Valves and Stops.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Provide each fixture with trap, easily removable for servicing and cleaning.
- B. Provide new PVC or ABS waste and vent piping from basement to kitchen sink, all bathroom fixtures, and laundry sink.
- C. Provide flexible PEX piping with a minimum number of coupling to all fixtures. Install mechanical connectors if appropriate for each fixture.
 - 1. Size pipe to 1990 CABO minimums per table 2406.5
 - 2. Include clothes washer hookup, dishwasher and ice-maker hookup.
- D. Provide all water piping and shut-off valves at each fixture necessary to complete work.
- E. Provide water meter to comply with existing code.
- F. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- G. Install components level and plumb.
- H. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 9005, color to match fixture.
- I. Seal around plumbing penetrations in all exterior surfaces, surfaces that border on unconditioned spaces, between floors, and through the exterior of the building.
- J. Clean out basement floor drain at end of construction period and verify operation and function.
 - 1. Install new drain cover.

END OF SECTION

SECTION 23 0000
RESIDENTIAL VENTILATION

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide galvanized rigid ductwork for connection of new range hood at Kitchen. Route the ductwork horizontally and provide dampered wall cap termination at exterior wall. See NEC specification #1000.
- B. Provide dryer vent duct with code compliant installation. Provide pvc type wall cap with backflow damper and bird screen.
- C. Provide bath fan and galvanized rigid ductwork at bathrooms. Route through joist space to side wall and provide dampered wall vent cap termination. See NEC Specification #1010.
- D. Provide adequate fresh air in new duct and penetration for water heater and furnace located in basement.

PART 2 PRODUCTS

2.01 BATHROOM VENT FAN/LIGHT FIXTURE:

- A. All vent fans shall be energy star rated ceiling mounted fan/light fixtures rated for a minimum 100 watt exterior ducted vent fan capable of a minimum of 80 CFM
- B. Product: Panasonic Whisper Green series. Continuous exhaust at 30 CFM
- C. Switch: Light and fan shall use same switch with a time delay for fan such as the EFI/Light Time Delay Switch Part # 5100.505 or equipped with a humidistat sensor.
- D. Ducting: Install 4" metal duct and vent to the exterior ideally through a gable end using a 4" hooded vent with damper.
 - 1. All duct seams shall be sealed with duct mastic. Insulate duct work with vinyl or foil faced R-6 minimum duct insulation.
 - 2. Repair any damage to the ceiling installation or air seal fan/light assembly to the ceiling with low VOC caulk.

2.02 DUCT ASSEMBLIES

- A. General Exhaust: 1/2 inch w.g. (125 Pa) pressure class, galvanized steel.
- B. Kitchen Cooking Hood Exhaust: 1/2 inch w.g. (125 Pa) pressure class, galvanized steel.

2.03 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated.
- B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

2.04 KITCHEN HOOD EXHAUST DUCTWORK

- A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, SMACNA Kitchen Ventilation Systems and Food Service Equipment Fabrication & Installation Guidelines and NFPA 96.

PART 3 EXECUTION -- NOT USED

END OF SECTION

SECTION 23 5400
FORCED AIR FURNACE AND DUCTS

PART 1 GENERAL

1.01 LOCATIONS

- A. Provide sealed rigid duct from gas dryer to exterior and dampered exterior prefinished vent hood at dryer vent on exterior wall.
- B. Provide high efficiency, direct vented gas furnace.
- C. Provide all new ductwork distribution system throughout the house for forced air heating and cooling.
- D. Provide grilles at all HVAC supply and return locations throughout the house.
- E. Provide programmable thermostat in same location as existing thermostat.
- F. Provide ducting from microwave range hood to exterior through wall.
- G. Refer to Section 260001 for Bathroom exhaust fan and ducting.

PART 2 PRODUCTS

2.01 GAS FIRED FURNACES

- A. Annual Fuel Utilization Efficiency (AFUE): 0.95 ("condensing").
- B. Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heating element, controls, air filter, humidifier, and accessories; wired for single power connection with control transformer.
 - 1. Safety certified by CSA in accordance with ANSI Z 21.47.
 - 2. Venting System: Direct.
 - 3. Combustion: Sealed
 - 4. Air Flow Configuration: Upflow.
 - 5. Heating: Natural gas fired.
- C. Performance:
 - 1. HVAC contractor will be responsible to determine heat load using Manual J.
- D. Cabinet: Steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.
- E. Primary Heat Exchanger:
 - 1. Material: Hot-rolled steel
 - 2. Shape: Tubular type.
- F. Secondary Heat Exchanger:
 - 1. Material: Aluminized steel.
 - 2. Coating: Polypropylene.
- G. Gas Burner:
 - 1. Atmospheric type with adjustable combustion air supply,
 - 2. Gas valve, two stage provides 100 percent safety gas shut-off; 24 volt combining pressure regulation, safety pilot, manual set (On-Off), pilot filtration, automatic electric valve.
 - 3. Electronic pilot ignition, with electric spark igniter.
- H. Supply Fan: Centrifugal type rubber mounted with direct drive with adjustable variable pitch motor pulley.
- I. Motor: ECM motor; 1750 rpm two-speed, permanently lubricated, hinge mounted.
- J. Air Filters: 1 inch (25 mm) thick glass fiber, disposable type arranged for easy replacement.
- K. Warranty: Minimum 20 year warranty on heat exchanges, 5 year warranty on parts.

2.02 DUCTWORK

- A. Ducts: Provide all new, code-compliant, rigid, galvanized steel, sealed ductwork throughout the house.

2.03 GRILLES

- A. Prefinished metal rectangular grilles. Match color of surrounding finish material as closely as possible.

2.04 THERMOSTAT

- A. Provide programmable setback thermostat.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install furnace with a 2" rise above the Basement floor. Connect to existing gas service. Vent with PVC per manufacturer's specifications. Install an exterior return air filter box on one side, both sides or bottom of new furnace.
- B. Review layout of ductwork, supply registers and return air grilles with Construction Manager prior to starting work. Notify Construction Manager of any new ceiling or wall enclosures or modifications required for ductwork layout. All modifications are to be included in the base contract amount.
- C. Seal all duct joints with duct mastic.
- D. Install in accordance with NFPA 90A.
- E. Install gas fired furnaces in accordance with NFPA 54.
- F. Provide vent connections in accordance with NFPA 211.

3.02 TESTING

- A. Test completed installation for optimal performance. Balance supply and return on each floor to assure even heating throughout the house.

END OF SECTION

SECTION 23 6213
FORCED AIR A/C

PART 1 GENERAL

1.01 LOCATIONS

- A. Provide all new forced air AC system, including exterior pad for condenser.

1.02 SUBMITTALS

- A. Product Data: Provide rated capacities, weights specialties and accessories, electrical nameplate data, and wiring diagrams. Include equipment served by condensing units in submittal, or submit at same time, to ensure capacities are complementary.
- B. Design Data: Indicate pipe and equipment sizing.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

- A. Units: Self-contained, packaged, factory assembled and pre-wired units suitable for outdoor use consisting of cabinet, compressors, condensing coil and fans, integral sub-cooling coil, controls, liquid receiver, wind deflector, and screens.
- B. Acceptable Manufacturer: Goodman, or pre-bid approved equal acceptable to Construction Manager.
- C. Performance Ratings: Seasonal Energy Efficiency Ratio of 16 minimum.

2.02 CASING

- A. House components in welded steel frame with galvanized steel panels with weather resistant, baked enamel finish.

2.03 CONDENSER COILS

- A. Coils: Aluminum fins mechanically bonded to seamless copper tubing. Provide sub-cooling circuits. Air test under water to 425 psig (2900 kPa), and vacuum dehydrate. Seal with holding charge of nitrogen.

2.04 FANS AND MOTORS

- A. Weatherproof motors suitable for outdoor use, single phase permanent split capacitor or 3 phase, with permanent lubricated ball bearings and built in current and thermal overload protection.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Provide piping for refrigeration system as required.
- B. Provide connection to refrigeration piping system and evaporators. Comply with ASHRAE Std 15.

END OF SECTION

SECTION 26 0001
POWER, WIRING AND DEVICES

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide a separate 20 ampere laundry circuit and a separate 20 ampere Kitchen appliance circuit.
- B. Verify that circuit breaker amperage matches wire size.
- C. Wire and ground electrical service to 2011 NEC.
- D. Provide new electrical service into the house due to the complete removal and replacement of exterior siding
- E. Ground the electrical service to the water service with a copper conductor within 5 feet of the entrance point of the water service.
- F. Close openings in service panel/junction boxes with knockout seals and/or junction box covers.
- G. Provide hard-wired, battery backup smoke/CO detectors per bulletin 80-1 and other smoke detectors as required by the IRC. Conceal all wiring in walls and patch walls if openings are cut.
- H. Provide electrical service and wiring for new water heater, furnace, condenser, exhaust fans and Kitchen & Laundry appliances.
- I. Provide wiring, receptacles, switches and coverplates throughout the house as required by code and as specified in Bulletin 80-1. Existing device locations may be reused, and additional devices provided as required. All added receptacles must be grounded, tamper-resistant and be on an Arc-Fault Circuit Interrupter-protected circuit.
- J. Provide doorbell chime and doorbell at Front Entry.
- K. Provide all new weatherproof outlet at Front Porch and at Rear Deck.
- L. Provide all new ceiling mounted two-speed low-sone Energy Star exhaust fan with occupancy sensor in each Bathroom. Provide ductwork with insulated rigid ducting to dampered vent in roof.
- M. Provide service in conduit to garage. Provide receptacle at ceiling for overhead door, GFCI at 48" AFF inside garage and weatherproof GFCI at 42" AFF on the exterior.
- N. Check all outlets for proper polarity.

1.02 SUMMARY OF BULLETIN 80-1 (PROPERTY MAINTENANCE CODE)

- A. All hazardous, improper and/or illegal wiring shall be removed or required to the present Electrical Code. This will include other buildings on the property such as garages, sheds, etc.
- B. Minimum size for all new services for single residential occupancies shall be 100 ampere, 240 Volt.
- C. No additions or extensions will be allowed on an existing ampere services.
- D. The Following are minimum requirements for new service installation:
 - 1. **Electrical outlets required:** Every habitable room 120 square feet or less in area, of a dwelling or dwelling unit of a multiple dwelling shall contain at least two separate and remote duplex outlet shall be required for each additional 80 square feet or fraction thereof. Most new outlets must be Arc-Fault Circuit Interrupters (AFCI) protected according to Section 210.12 of the 2008 National Electrical Code.
 - 2. **In Kitchens:** Three separate and remote duplex outlets shall be required. At least one of the required duplex outlets shall be supplied by a separate twenty ampere circuit. Any new receptacle installed for the counter top shall be of the Ground Fault Circuit Interrupter (GFCI) type.
 - 3. **Every public hall, water closet compartment, bathroom, laundry room and furnace room must contain at least one electric light fixture.** In addition to the light fixture, every bathroom and laundry room must have at least one duplex outlet. The required

duplex outlet in each laundry room must be on a separate twenty ampere circuit. The required duplex outlet in each bathroom must be of the (GFCI) type. Any existing outlets in any bathroom must be converted to a GFCI-protected outlet or removed. The required GFCI outlet in the bathroom must be immediately adjacent to the sink. If a bathroom is added or gutted as part of the update, a 20 ampere circuit will be required per NEC 210.11(C)(3).

4. **Every common hall and inside stairway** in every residential structure or dwelling unit shall be adequately lit with an illumination of at least five lumens per square foot in the darkest portion of the normally traveled stairs and passageways.
5. **All exterior exits and entryways** are required to be illuminated a minimum of one footcandle at grade level for security.
6. **Exterior lighting** at garages is required to be adequate so as to not endanger health or safety. An average of one footcandle at the pavement is required. Exterior lighting must be in conformance with other city codes.
7. **Basement:** One lighting outlet is required for each 200 square feet of floor space. At least one of the required basement lighting outlets shall be switched from the head of the stairs.
8. **Smoke Detectors:**
 - a. All single-family dwelling shall have a hard-wired (120 volt electrical, not battery) battery-backup smoke detector installed near (not in) the bedrooms. If there are legal bedrooms on more than one level, the detector shall be installed on the level that has the greater number of bedrooms. If there are an equal number of bedrooms on more than one level, the detector shall be installed on the upper level near the bedrooms.
 - b. If the project includes building construction that requires a Building Permit, additional hard wired interconnected and/or battery-type smoke detectors are required per the Building Code.
9. **Metallic Light Fixtures (Luminaries):** If within five feet horizontally or eight feet vertically of grounded surfaces (metallic piping, concrete floor, etc.) must be grounded.
10. **Residential Closet Lights:** All closet lights must either be a florescent fixture(luminaire) or an enclosed incandescent fixture of the types required by the present Electrical Code. Fixtures must not be directly over the storage area in a closet; they must either be moved or eliminated and blanked off.
11. **Service conduits run in outside walls:** If a 100-ampere service is changed from fuses to circuit breakers, the meter is already outside, and the existing conduit is run in the outside wall, the conduit may be re-used. If the service is an upgrade (increase in amperage), conduit in the wall may not be re-used.

1.03 SECTION INCLUDES:

- A. Rewire house to code.
- B. Certify Electrical Distribution: Electrician shall inspect all exposed wiring, motors, fixtures and devices for malfunction, shorts and hosing code compliance. Non-functioning and dangerous equipment and wiring shall be replaced.
- C. Provide all new wiring and devices as required by the work covered in the Scope of Work.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Conduit and Cable: Provide materials that meet code requirements.
- B. New Service: Include a main disconnect, 22 circuit panel board, meter socket, weather head, service cable, and ground rod and cable. Seal exterior service penetrations.
- C. Devices and Coverplates: Provide all White or Ivory devices per Project Managers Selection. Provide heavy duty residential grade devices.
- D. Smoke/CO Detectors: Hard wired w/ battery-back up type units
- E. Doorbell system: System containing a low voltage transformer, power connection, buzzer and front door button.

- F. Equipment Wiring: Provide the correct power supply on separate circuit, with over current protection including all connectors for the Water Heater, Furnace, Microwave, Refrigerator, A/C, Dishwasher, Washer, and Dryer.
 - 1. Kitchen Receptacles to be 20 amp Circuits:
 - a. Install small appliance circuits along counter tops to code.
 - 1) Evenly dividing the number of countertop appliance receptacles between 2 circuits.
 - 2) GFCI receptacles when they fall within 6 feet of sink.
 - b. Individual circuits for permanently installed appliances; range, dishwasher, exteriorly vented Microwave with Rangehood and refrigerator to code.
- G. GFCI Receptacles: Install flush mounted, ground fault circuit interrupted ivory duplex receptacle adjacent to lavatory using copper Romex.

2.02 EXHAUST FANS

- A. Bathroom Vent Fan/Light Fixture: Shall be Energy Star rated ceiling mounted fan/light fixture rated for a min 100 watt exterior ducted vent fan capable of a minimum of 80 CFM.
 - 1. Product: NuTone QTREN080FLT or like product to be approved by the Project Manager.
 - 2. Switch: Light and fan shall use same switch with a time delay for fan such as the EFI/Light Time Delay Switch Part # 5100.505 or equipped with a humidistat sensor.
 - 3. Ducting: Install 4" metal duct and vent to the exterior ideally through a gable end using a 4" hooded vent with damper.
 - a. All duct seams shall be sealed with duct mastic. Insulate duct work with vinyl or foil faced R-6 minimum duct insulation.
 - b. Repair any damage to the ceiling installation or air seal fan/light assembly to the ceiling with low VOC caulk.

2.03 MATERIALS

- A. All materials shall be UL approved and/or National Electrical Code rated.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Building Codes: The extent of electrical work indicated in the Scope of work is stated generally to indicate end result of work. The Contractor is responsible for making a thorough inspection of the site to determine the full extent of work required to achieve the end results. All electrical work must meet current building code requirements and must pass City of Saint Paul field inspection. Any work that does not meet codes or pass inspection must be corrected to the satisfaction of the city inspector at no additional cost to the Owner.
- C. Remove and dispose of all abandoned wiring and devices. Modify existing wiring and devices as indicated.
- D. All new wiring, when passing through finished areas, shall be concealed.
- E. Test all wiring and devices for proper operation.
- F. All drilling, cutting and fastening shall be neat and true, and shall not critically damage framing members.
- G. All patching shall match the surrounding surface.

END OF SECTION

SECTION 26 5101

HRA LIGHTING

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide all new light fixture in Front Porch soffit and on exterior wall at Rear Deck.
- B. Provide all new motion detector light fixture on the northeast corner of the Garage.
- C. Provide ceiling light fixture in Dining, Kitchen, front entry door area, Bedroom 1, Bedroom 2, Bedroom 3, second floor landing at stairway, second floor Hall and Basement stair top landing .
- D. Provide wall mounted light fixture at Bathroom 1 and Bathroom 2.
- E. Provide ceiling light fixture over Kitchen sink.
- F. Provide Basement ceiling mounted light fixtures and provide wiring to new wall switch at top of Basement stair.
- G. See Color & Material Selections in appendix for fixture selections by room.

PART 2 PRODUCTS

2.01 INTERIOR LIGHTING

- A. Royce Lighting
 - 1. Product Series: Carlton, Pewter Finish
 - a. 3 Light Vanity: Model RV5209ES3
 - b. 3 Light Flushmount: Model RFM5209ES
 - c. 1 Light Wall Sconce: Model RV5209ES1
 - d. Mini Pendant: Model RMP5209ES1
 - e. 5 Light Chandelier: Model RC5209ES5
- B. Flushmount Ceiling Fixtures
 - 1. Twin pack flush mount, 15" diameter, satin nickel finish, energy star rated.
- C. Other Acceptable Manufacturers: To be approved by Project Manager

2.02 EXTERIOR LIGHTING

- A. Garages: DualBrite 300 watt motion security light with shields: Model SL-5318-WH-D
- B. Exterior Flush Mount
 - 1. Patriot Lighting
 - a. Mission

2.03 BASEMENT LIGHTING

- A. Stairway: One fixture on stairway landing and one at the bottom of the stairway. Once switch at the top of the basement stairway to control these two lights.
- B. Additional ceiling mounted pull chain lights in various location throughout the basement where necessarily.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. All new wiring when passing through finished areas shall be concealed.
- C. Install luminaires plumb and square and aligned with building lines and with adjacent luminaries.
- D. Provide lamps with all light fixtures.

END OF SECTION

SECTION 28 1600
INTRUSION DETECTION

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide hardwired monitored security system with 2 door sensors, 2 control panels and 1 motion detector. Locate one door sensor and control panel at Front Entry door and one at Rear Entry door.
- B. Include a monthly monitoring service at a rate not to exceed \$50/month.
- C. Contracts for monitoring must be month to month, not an extended period.
- D. Monitoring shall begin upon completion of construction and be paid by Owner.

1.02 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Furnish products listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and indicated.

PART 2 PRODUCTS

2.01 ALARM CONTROL PANEL

- A. Control Panel: Modular construction with surface wall-mounted enclosure.
- B. Power supply: Adequate to serve control panel modules, remote detectors, and alarm signaling devices. Include battery-operated emergency power supply with capacity for operating system in standby mode for 24 hours.

2.02 INITIATING DEVICES

- A. Magnetic Switches:
- B. Motion Detectors:

2.03 SIGNAL DEVICES

- A. Alarm Bells: NFPA 72, electric single stroke, 8 inch (200 mm) bell with operating mechanism behind dome. Sound Rating: 81 dB at 10 feet (3 M).

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Use 18 AWG minimum size conductors for detection and signal circuit conductors. Install wiring in cable.
- C. As soon as System is installed contact HRA Project Manager Insert HRA PM's Name by email at Insert HRA PMs email to inform him/her to apply for a security permit.

3.02 CLOSEOUT ACTIVITIES

- A. Demonstrate normal and abnormal modes of operation, and required responses to each.

END OF SECTION

SECTION 31 2200

GRADING

PART 1 GENERAL

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1.01 LOCATIONS

- A. Refer to Landscape plan for grading work.

1.02 SECTION INCLUDES

- A. Rough grading the site for site structures and planting beds.
- B. Topsoil and finish grading .
- C. Fill.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay, or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.
- B. Fill Materials
 - 1. General
 - a. Provide soil materials free from organic matter and deleterious substances, containing no rocks or lumps over 2" in the greatest dimension and with no more than 15% of the rocks or lumps larger than 1" in their greatest dimensions, predominately granular, non-expansive soil. Fill material is subject to the approval of the construction manager and is that material removed from excavations or imported from off-site borrow areas.
 - b. Provide 6" minimum thickness of Class 5 base course under slabs-on-grade.
 - 2. Under All Paved Areas
 - a. Under Class 5 base course: Non-frost susceptible sand having less than 5% of the particles by weight passing the #200 sieve and less than 40% by weight passing the #40 sieve.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.

3.03 ROUGH GRADING

- A. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- B. Do not remove wet subsoil , unless it is subsequently processed to obtain optimum moisture content.
- C. When excavating through roots, perform work by hand and cut roots with sharp axe.
- D. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

3.04 FINISH GRADING

- A. Before Finish Grading:
 - 1. Verify building and trench backfilling have been inspected.
 - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch (13 mm) in size. Remove soil contaminated with petroleum products.
- C. Build up ground slope at foundation wall using clean fill.

- D. New fill shall have an apporoximate slope of 1/12 and extend away from the foundation wall approximately five feet.
- E. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches (75 mm).
- F. Place topsoil to the following compacted thicknesses:
 - 1. Areas to be Sodded: 4 inches (100 mm).
- G. Place topsoil during dry weather.
- H. Remove roots, weeds, rocks, and foreign material while spreading.
- I. Vigorously tamp or roll new fill to achieve settled depth.
- J. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

END OF SECTION

**SECTION 32 1313
CONCRETE PAVING**

PART 1 GENERAL

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1.01 LOCATIONS

- A. Provide concrete sidewalks and Garage apron, as indicated on the Landscape Plan.

1.02 REFERENCE STANDARDS

- A. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2010.
- B. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2010.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

- A. Concrete Sidewalks: 3,000 psi (20.7 MPa) 28 day concrete, 4 inches (100 mm) thick, buff color Portland cement, exposed aggregate finish.
- B. Concrete Apron: 4,000 psi (27.6 MPa) 28 day concrete, 5 inches (125 mm) thick, 6/6 - 6 x 6 inch mesh reinforcement, wood float finish.

2.02 FORM MATERIALS

- A. Wood form material, profiled to suit conditions.

PART 3 EXECUTION

3.01 SUBBASE

3.02 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.

3.03 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F (4 degrees C), or surface is wet or frozen.

3.04 JOINTS

- A. Provide scored joints:
 - 1. At 3 feet intervals in sidewalk and 4 feet intervals in patio.

3.05 FINISHING

- A. Sidewalk and Patio Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch (6 mm) radius.

3.06 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

END OF SECTION

SECTION 32 3113
CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.01 LOCATIONS

- A. Provide chain link fence and gate at east lot line and back to front corner of house and alley corner of Garage as indicated on the Landscape Plan.
- B. Provide chain link fence and gate on the west side of the rear yard and back to Front Porch and Garage corner, as indicated on the Landscape Plan.

1.02 SECTION INCLUDES

- A. Fence framework, fabric, and accessories.
- B. Manual gates and related hardware.

1.03 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete anchorage for posts.

1.04 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2012.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- C. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 2011a.
- D. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2012.
- E. ASTM F567 - Standard Practice for Installation of Chain-Link Fence; 2011.
- F. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework; 2011.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Posts, Rails, and Frames: ASTM A 1011/A 1011M, Designation SS; hot-rolled steel strip, cold formed to pipe configuration, longitudinally welded construction, minimum yield strength of 50 ksi (345 MPa); zinc coating conforming to ASTM F1043 Type B on pipe exterior and interior.
- B. Wire Fabric: ASTM A 392 zinc coated steel chain link fabric, 4' high.

2.02 COMPONENTS

- A. Line Posts: 1.9 inch (48 mm) diameter.
- B. Corner and Terminal Posts: 2.38 inch (60 mm).
- C. Gate Posts: 3.5 inch (89 mm) diameter.
- D. Top and Brace Rail: 1.66 inch (42 mm) diameter, plain end, sleeve coupled.
- E. Gate Frame: 1.66 inch (42 mm) diameter for welded fabrication, 3' wide x 4' high.
- F. Fabric: 2 inch (51 mm) diamond mesh interwoven wire, 6 gage (5 mm) thick, top selvage knuckle end closed, bottom selvage twisted tight.
- G. Tension Wire: 6 gage (5 mm) thick steel, single strand.

2.03 ACCESSORIES

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.

- C. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches (1525 mm) high, fork latch with gravity drop and padlock hasp ; keeper to hold gate in fully open position.

2.04 FINISHES

- A. Components (Other than Fabric): Galvanized in accordance with ASTM A123/A123M, at 1.7 oz/sq ft (530 g/sq m).
- B. Hardware: Hot-dip galvanized to weight required by ASTM A153/A153M.
- C. Accessories: Same finish as framing.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install framework, fabric, accessories and gates in accordance with ASTM F 567.
- B. Place fabric on outside of posts and rails.
- C. Set intermediate, terminal, and gate posts plumb in hole cored into concrete slab and set with non-shrink grout.. Slope top of concrete for water runoff.
- D. Stretch fabric between terminal posts or at intervals of 100 feet (30 m) maximum, whichever is less.
- E. Position bottom of fabric 2 inches (50 mm) above finished grade.
- F. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches (380 mm) on centers.
- G. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.
- H. Install bottom tension wire stretched taut between terminal posts.
- I. Do not attach the hinged side of gate to building wall; provide gate posts.
- J. Install gate with fabric to match fence. Install hardware.

3.02 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6 mm).
- B. Maximum Offset From True Position: 1 inch (25 mm).

END OF SECTION

SECTION 32 9223

SODDING

PART 1 GENERAL

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1.01 LOCATIONS

- A. Refer to Landscape plan sodding work.
- B. No bare soil is permitted anywhere on site at project closeout.

1.02 REFERENCE STANDARDS

- A. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding; Turfgrass Producers International; 2006.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Sod: TPI, Certified Turfgrass Sod quality; cultivated grass sod; type indicated in plant schedule on Drawings; with strong fibrous root system, free of stones, burned or bare spots; containing no more than 5 weeds per 1000 sq ft (100 sq m). Minimum age of 18 months, with root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this section.

3.02 LAYING SOD

- A. Moisten prepared surface immediately prior to laying sod.
- B. Lay sod immediately after delivery to site to prevent deterioration.
- C. Lay sod smooth and tight with no open joints visible, and no overlapping; stagger end joints 12 inches (300 mm) minimum. Do not stretch or overlap sod pieces.
- D. Where sod is placed adjacent to hard surfaces, such as curbs, pavements, etc., place top elevation of sod 1/2 inch (13 mm) below top of hard surface.
- E. Water sodded areas immediately after installation. Saturate sod to 4 inches (100 mm) of soil.
- F. After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove minor depressions and irregularities.

3.03 MAINTENANCE

- A. General Contractor is responsible for the maintenance of sod until project closeout.

END OF SECTION

SECTION 32 9300

PLANTS

PART 1 GENERAL

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1.01 LOCATIONS

- A. Refer to Landscape Plan for planting work.

PART 2 PRODUCTS

2.01 PLANTS

- A. Plants: Species, size and quantity identified in Landscape Plan, grown in climatic conditions similar to those in locality of the work.

2.02 MULCH MATERIALS

- A. Mulching Material: Hardwood species wood shavings, free of growth or germination inhibiting ingredients.

2.03 TOP SOIL MIX

- A. A uniform mixture of 1 part peat and 3 parts topsoil by volume.

PART 3 EXECUTION

3.01 RAINGARDEN INSTALLATION

- A. Remove 18 inches of soil leaving compacted 1 to 1 side slopes rising to finished grade.
- B. Deeply till and break apart basin floor beyond compaction.
- C. Add 2 inches of leaf compost and till into soil.
- D. Finish Raingarden by hand grading a flat, level basin and 2 to 1 side slope, as indicated on Landscape Plan.
- E. Add 2-inches of shredded hard wood mulch, as with slopes
- F. Install edging as indicated on Landscape Plan.
- G. Ensure that downspout runoff enters the raingarden.

3.02 PLANTING

- A. Set plants vertical according to the Landscape Plan.
- B. Remove non-biodegradable root containers.
- C. Set plants in pits or beds, partly filled with prepared plant mix, at a minimum depth of 6 inches (150 mm) under each plant. Remove burlap, ropes, and wires, from the root ball.
- D. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch (150 mm) layers. Maintain plant life in vertical position.
- E. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

3.03 PLANT RELOCATION AND RE-PLANTING

- A. Relocate plants as indicated on Landscape Plan or by Construction Manager.
- B. Replant plants in pits or beds, partly filled with prepared topsoil mixture, at a minimum depth of 6 inches (150 mm) under each plant. Remove burlap, ropes, and wires, from the root ball.
- C. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch (150 mm) layers. Maintain plant materials in vertical position.
- D. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

3.04 MAINTENANCE

- A. Provide maintenance at no extra cost to Owner; Owner will pay for water.
- B. Irrigate sufficiently to saturate root system and prevent soil from drying out.
- C. Remove dead or broken branches and treat pruned areas or other wounds.

- D. Neatly trim plants where necessary.
- E. Immediately remove clippings after trimming.
- F. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions.
- G. Control insect damage and disease. Apply pesticides in accordance with manufacturers instructions.
- H. Remedy damage from use of herbicides and pesticides.
- I. Replace mulch when deteriorated.
- J. Maintain wrappings, guys, turnbuckles, and stakes. Adjust turnbuckles to keep guy wires tight. Repair or replace accessories when required.

END OF SECTION